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SMITHSONIAN DEPOSIT.

Riter-Conley Manufacturing Company

STEEL CONSTRUCTION

Pittsburgh

KOPPERS
PATENT
CHAMBER OVENS

ARE IN OPERATION AND UNDER CONSTRUCTION AT THE PRESENT TIME FOR THE PRODUCTION OF UPWARDS OF 40,000,000 CU. FT. OF GAS PER DAY.

PLANTS IN OPERATION AND UNDER CONSTRUCTION AT THE FOLLOWING GAS WORKS:

	Ovens.	Cu. Ft. per Day.
The Vienna Corporation Gas Works (Simmering) . .	46	5,250,000
" " " " " (Leopoldau) . .	72	7,400,000
The Berlin Corporation (Gas Works IV. Danzigerst.) .	40	4,800,000
The Kiel Gas Works	23	2,750,000
The Buda-Pesth Corporation Gas Works	78	9,500,000
The Tokio Gas Company (Omori Works)	36	4,200,000
" " " " (Sunamura Works)	15	1,950,000
The Birmingham Corporation Gas Works	12	1,400,000

ADVANTAGES OF KOPPERS' SYSTEM.

Low fuel consumption. Ovens heated by gas produced from coke breeze and low grade fuel. Coke produced can be employed for metallurgical purposes. Increased yield of Ammonia. Tar produced is of a light, fluid character. LESS COST OF LABOR. LOW CAPITAL COST.

Full Particulars on Application to the

H. KOPPERS COMPANY,

CONSTRUCTORS OF HORIZONTAL CROSS-REGENERATIVE COKE AND GAS OVENS,

5 S. WABASH AVENUE, = = = = = = CHICAGO, ILLINOIS.

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Battery of Sixteen-Foot Station Meters Recently Installed in the Water Gas Plant Division, Astoria (N. Y.) Light, Heat and Power Company.

This illustration shows one of the handsomest and largest station meter installations in the country. It consists of 6 station meters having cast-iron cases of conventional, cylindrical form, each 16 feet in length and 16 feet in diameter, internal dimensions. The body or shell of each is 16 plates and the heads each are in 7 pieces.

The measuring drums are of the celebrated Hinman type, built on steel shafts, running in bronze boxes fitted in the front and rear heads of the cases. The meters each have a guaranteed capacity of 5,000,000 cubic feet of gas per 24 hours, with a differential not exceeding 15-tenths, giving a total daily capacity for the battery of 30,000,000 cubic feet.

The gas connections to the meter are made with inlet and outlet headers of 36-inch diameter steel pipe, running the full length of the building, with 24-inch connections to and from the meters. The outlet connection is formed on the top of the meters, directly in back of the front head, thus securing the advantage of a front outlet without marring the symmetrical appearance of the meters.

The same thought is followed out in mounting a handsome differential gauge, on a mahogany backing, at either end of the room, and to each of which the three nearest meters are connected. These gauges show the inlet and outlet pressure and difference on each or all the meters. By not mounting a gauge on each meter an unsightly assembling of pressure piping on the front head is avoided.

Each meter has a water line gauge and an overflow gauge, with sealbox mounted on the front head, the connection to inlet pressure being carried over the top of the meter. A water supply is mounted on the back head, and both this and the overflow gauge are arranged so as to give a visible supply and discharge of water.

The index on each meter is an adaptation of a familiar form of straight reading dials, with an observation dial above and an enameled name-plate below. The design is not only neat but somewhat novel, in that the dial face is made of mahogany, veneered on a laminated backing to prevent warping.

The building which houses these meters was designed by the Engineers of the Astoria Company, and is approximately 73 feet wide by 144 feet long and 55 feet high, from grade level to top of monitor, and 10 feet deep below grade to basement floor. It is designed so that at the proper time a second battery of meters, equal to the present, can be installed on the opposite side of the building, giving ample room between the meters, so that the drums can be withdrawn for repair or inspection at any time, if necessary. The building itself has concrete foundation walls, 2 feet 4½ inches thick, resting on concrete footing, with brick walls, 16 inches thick, with 3 feet pilaster, 8½ inches thick. The roof is carried on 9 steel trusses of the arch type, with a clear span of 69 feet. The monitor, which is 22 feet wide and 14 feet high, runs the length of the building. Both the roof and the monitor are constructed of 3-inch terra cotta, book tile, laid in cement, supported on tee iron purlins, and covered with slate shingles. The interior walls of the building are plastered with cement and faced with white enameled brick to a height of 5 feet above the operating floor. The floor in front of the meters is constructed of concrete slabs, resting on steel beams, and finished with terrazzo tile, while the flooring between, and in back of, the meters is constructed of open grating and checkered steel plates.

The meters were built by the well-known firm of meter manufacturers, Messrs. D. McDonald & Co., of Albany, N. Y., and are used to measure the gas made in the recently installed water gas plant at the Astoria works. They are, in general design, a duplicate of 4 similar meters, installed 2 or 3 years ago in the coal gas plant at this same works.

(*For illustration see following page.*)

[CONCLUDED FROM PAGE 189.]

PROCEEDINGS, ELEVENTH ANNUAL CONVENTION, WISCONSIN GAS ASSOCIATION.

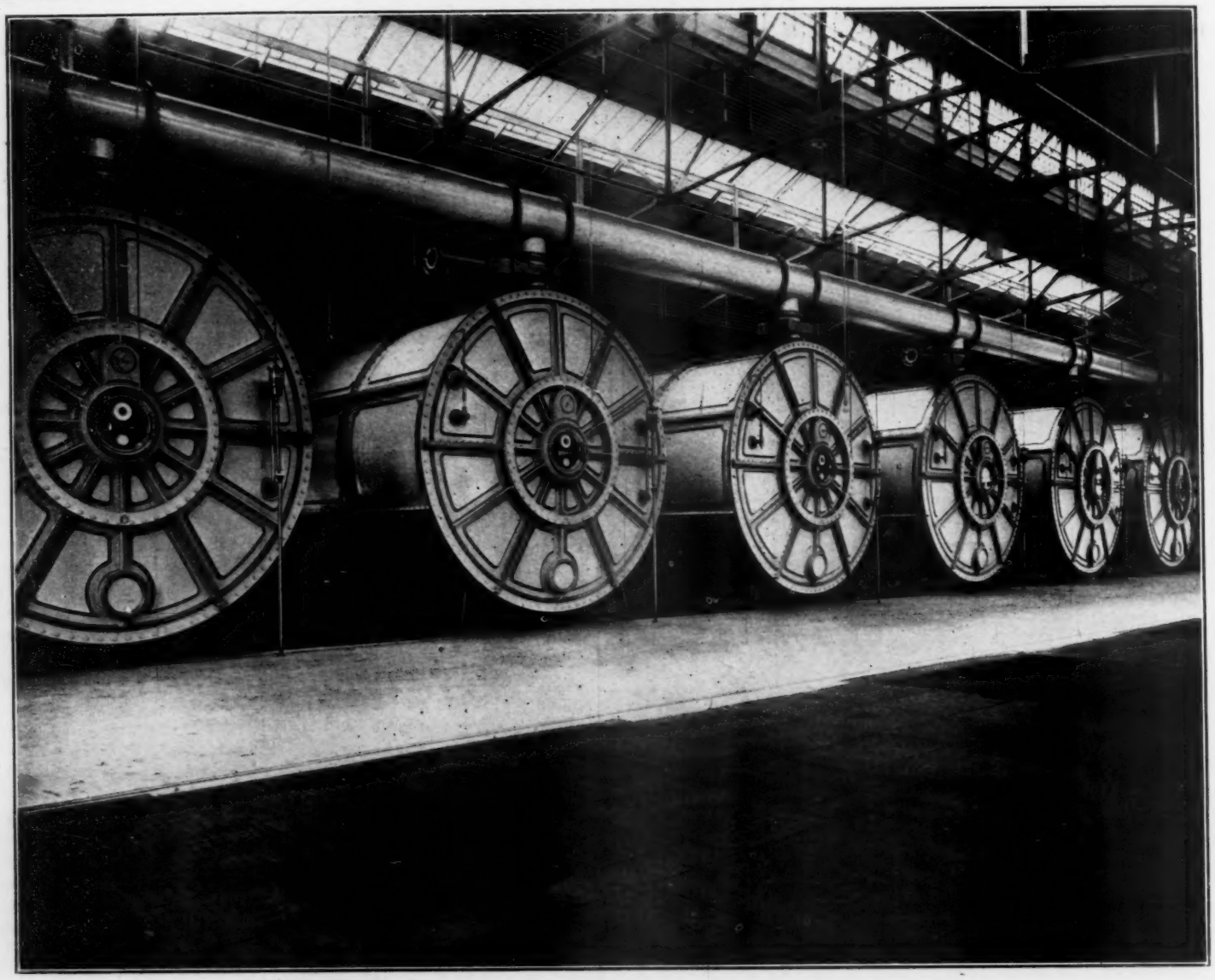
HELD IN THE HOTEL PFISTER, MILWAUKEE, WIS., MAY 15TH AND 16TH, 1912.

SECOND DAY—MORNING SESSION.

THE QUESTION BOX.

The President—Now comes the Question Box. We have not many questions; no doubt the parties presenting some of them would like to have them answered to the best of our ability. I guess we are all willing to contribute as far as we can. The first question is the following:

"Can leaks be stopped in relief holder throwing perhaps 2 inches pressure with any kind of cement or adhesive patch?"



Has anybody had experience therein? Evidently someone having a leaky relief holder wants to patch it under pressure. It is not stated where the leak is, but I take it to be a seam leak. If it is an old relief holder it is probably pretty light.

Mr. Luebkeman—I have not had any experience in stopping leaks in relief holders, but a leak of that kind can be stopped by using a plate. If it is a split, cut that split larger, and use a toggle bolt. Put the toggle bolt through, draw it out, and put a plate over it, with red lead, gasket, or anything suitable.

The President—Red lead and litharge, I suppose.

Mr. Mason—We have stopped leaks in that way. We use a great many toggle bolts. If the hole is a small one, put a washer over it, making the hole opening large enough to put a toggle bolt through; then draw the washer.

The President—I never had occasion to use the toggle bolt, but have stopped many leaks with red lead and litharge. It is necessary to pack it in some way temporarily until it is set, and when that occurs remove your holding material, whatever it may be. The chances are you will not have any more trouble.

Mr. Lathrop—There are on the market several compounds, one known as "Leak No," which can be used to stop holes in radiators and steam pipes, and the like, provided after putting it on you can let it set, with no pressure. It is claimed it will contract and expand with the metal, becoming practically a part of the latter. I tried it on steam radiators and it worked very well; but I do not know how it would work on a relief holder.

The President—The trouble here is he wants to patch this holder under pressure, which, of course, complicates the matter quite materially. Another question is:

"Give recipe for a good meter diaphragm oil."

That question is somewhat deeper than it looks on its face, since to carry that out to its conclusion we would have to go into this question of dipping meter diaphragms, etc. Another question is:

"Give recipe for good fixture key grease."

Anybody had any experience along that line?

Mr. McCorkindale—The suggestion is made here by one too modest to make it himself—to use good, old tallow.

The President—That is my standby. Here is a question in regard to gas arcs:

"How many gas arcs sh ould a maintenance man care for in a day?"

Will anyone running gas arc maintenance kindly answer that question?

Mr. Butterworth—Three or five-mantle?

The President—It is not stated.

Mr. Butterworth—From my experience in that line, I would say it depends almost entirely on local conditions; that is, how thickly the territory is filled, or saturated, you might say, with the arcs. In the last 23 months' experience, our men averaged 16 a day, doing thoroughly good jobs, overhauling the arcs completely. We make it a point to visit them once a week, and their average has been 16 a day, "threes" and "fives."

The President—The matter of the 3 or 5 would not cut much figure. It might make some difference, but a man would spend about as much time on one as the other.

Mr. Butterworth—It would make little difference; but there is a great difference in the conditions. The inspector finds usually very little work to do, although we instruct him to test and clean them thoroughly, and in case of doubt use the repairs. If he has any doubt at all, put on the mantle and do what else there is to do; but he must take time enough to thoroughly examine them, then go on.

We do a thorough job. The lamps are merely inspected and cleaned. He does no special work, save to hand in the reports.

The President—Another question:

"Is it advisable to handle single oven and cabinet ranges only?"

It seems coming back to the same old chestnut, local conditions; that is, what can you sell?

Mr. Stroebel—As to the kind of stove to sell, that rests entirely with the man who is doing the selling. One can sell single ovens easily, but if you try to keep from it you can sell all double oven stoves. The people who practice that will find the gas consumption is greater, for the people having bought such will use it occasionally. I never tried to sell a single oven stove, although I did sell one, and have been sorry ever since. I did not want to break my record. The cabinet range can be sold about as easily as the square type, especially at prices we have on stoves to day. We can interest almost anybody in the cabinet range. About 66 per cent. of the ranges we sell are cabinets.

The President—I would keep away from the single oven stove as far as possible. I might not be willing to lose a sale, but would not sell one if I could help it.

Mr. McCorkindale—We are not handling a single oven stove with broiler on top. Prior to handling this, we handled the double-oven stove entirely; that is, the oven and broiler, lower broiler. We have not had a single complaint, although we sold about 600 single-oven stoves, neither as to the kind of work it does nor as to the satisfaction it gives, yet it is the first place in which I ever sold the single-oven stove. I would not, however, sell a single oven stove without a broiler.

The President—I would take it that the question referred to the single-oven stove, without broiler.

Mr. McCorkindale—I would not handle that sort of stove.

Mr. Wortendyke—I question very much whether on 1 stove in 10 the broiler is ever used. I thought so for years. We sold the double oven stove, and never handled the single-oven type. Recently, however, I rather changed my opinion. A first-class, single-oven stove, 4-burner top, is, 9 times out of ten, as good for the company and as satisfactory to the consumer as the double oven range. I do not know the experience in your homes, but I do know that in my own home the oven broiler is very seldom used. As far as cooking meats is concerned, I think, if you know how, you can get very nearly the same results otherwise than by broiling.

The President—My observation has been that the broiler ordinarily is used more for toasting purposes than for cooking meats.

Mr. Wortendyke—That may be true, but you can get toast on top of the stove that is satisfactory.

Mr. McCorkindale—In my own home we use as much gas, making toast as we do on the rest of the cooking in getting the breakfast. I also find the same thing true with others. Speaking to some of my consumers I find that is exactly their own case. We sold Vulcan toasters for 35 cents and gave some away, but we often find them in the swill barrel. Very often there is where they go. I tried to get our girl to use it, but she says it is too slow, and I am satisfied other domestics are about alike in the thought. The broiler is a money-maker for the company, and considerable gas is used for toasting.

The President—That is true in our case. As you say, my home experience is that nobody can make toast like I can make in my broiler in the gas stove. I am free to admit, however, that I frequently have to teach the maid how to do it.

Mr. Wortendyke—That is just the point. Toast made in the broiler is unquestionably of fine quality, and it is a splendid place to make it; but that operation can be conducted equally well, and very much cheaper, on top of the stove.

The President—Would you use a separate broiler?

Mr. Wortendyke—I use a Crane toaster; I think that would suit your family. If you have a large family, and want 8 or 10 pieces of toast, so that you can fill up your oven, then the oven broiler is best, but ordinarily it is a case of 2 or 3 or 4 pieces of toast.

The President—I am accused of being the "Old Maid" in our family, and I suppose I will have to acknowledge it; but I have never seen a Crane toaster make toast that I wanted to eat when compared to the toast made in a broiler.

Mr. Gilbertson—I am the guilty person who asked the question, and the point is this: In the double standard stove what does it amount to? What is the idea of a single oven? It is a question of education or of promoting something the people can use every day. If we had to do the work in the kitchen the point would be this: How many times would we get on our knees to see whether the toast was being toasted? All of it would be dry as a board! I am making a canvass of our town of Rochester, Minn., and on the canvass and also on the installations made last year we found the question with the salesman, or the man who followed behind me, was to get the people to use everything on a gas stove. Some people have the $16 or $17 stove (the price to which we adhere, and we sell the single-oven stove), the cabinet being beyond their reach. Now, why should you eliminate that feature for the double-oven stove? You have something you can sell to a person at a very reasonable price ($16 or $17) in a single-oven stove. You bring a consumer into your office to show him the single-oven stove; you also show him the double-standard oven and the cabinet. Nine times out of 10 he will say: "I would like to have the cabinet, but I cannot afford it." Isn't that right?

Mr. McCorkindale—Yes, that part is all right.

Mr. Gilbertson—The point is one gets nothing more out of the double-oven stove than is gotten out of the single-oven one. The point I urge is you do not get any more, because you will not get the average housewife to use the broiler on a double-oven, standard stove. A cabinet range will always be advantageous to the company, because people can look into it. I believe that when a man tries to sell something he should sell it the right way. If the person can afford a cabinet range (and that is what they want) sell it to them. There is no reason why they should get on their knees to look into a broiler. If you can get something on the line of vision, so they do not have to stoop, you will give them something new. On a canvass, 75 per cent. of the double oven standard stoves installed the broilers are not being used. That is why I asked the question. I have now eliminated the double-oven standard stove absolutely.

The President—You mean the double-oven stove in which the broiler is under the oven?

Mr. Gilbertson—Yes.

The President—I will never put another stove of that kind on our show floor.

Mr. Gilbertson—I have prohibited it absolutely. It is a question of salesmanship in the first instance; that is the initial point. Then comes the follow-up system which was discussed here by Mr. Butterworth yesterday in connection with the lamp question. He followed that up very nicely. Using the follow-up plan system, and getting a consumer with a single oven (all they can afford), they are satisfied. But they are better satisfied with a cabinet, and the single oven will lead up to the cabinet, and we are going to get the cabinet feature, because we will have the oven and broiler in use.

The President—I will not say I would not sell one, but I will not put it in stock. Anyone who insists on it, as we are there to sell anybody anything they want, will get it.

Mr. Gilbertson—The point I brought up covered the stooping feature.

The President—All our stoves are either of the cabinet single-oven type, with the broiler in the oven.

Mr. Gilbertson—I have tried that feature too; that is very good.

The President—The next question is:

"What experiences have members had with motor-driven exhausters, using vacuum governors and compensators?"

Who has been against that proposition?

Mr. Humphrys—Probably Mr. Comstock can cite experiences.

Mr. Comstock—I am the guilty party.

Mr. Gilbertson—When in Watertown, Wis., we had an upright boiler, and the water conditions at times put us clean out of commission. We used a 2½-horse power motor, hooked up with the belt, ready to go ahead if the boiler gave out. Our holder was a 40,000-vessel and at various times, when down to the rivets, we set a 2½-horse power motor and put up shafting, gauging our fly wheel or the balance wheel of the exhauster. We belted from that and found it very successful, because I had boiler troubles galore. This plan worked very successfully. It is only a question of time until you have something like a duplicate or auxiliary boiler, or similar apparatus, something over a 15-horse power boiler generally went down every two weeks, and electricity was a godsend.

Mr. W. C. Butterworth—How did you govern it?

Mr. Gilbertson—That is merely a matter of getting down to or figuring out what speed you want.

Mr. W. C. Butterworth—You run constant speed?

Mr. Gilbertson—The set point you cannot eliminate. It is either high or low speed.

Mr. Butterworth—You must feed the gas to it.

Mr. Gilbertson—Oh, yes; that is so.

Mr. Patton—Mr. President, I understand that in the Red Wing (Minn.) plant a 2½-horse power motor is connected to the exhauster, a compensator being used in connection with it. I do not think it has been very satisfactory, on account of the compensator not working properly. In order to get the exhauster running accurately it was necessary to adjust it by hand.

Mr. McCorkindale—I asked the question. My conditions are these: We control the gas and electric light plant and the street railway as well. Our day electric load factor is very low. Having only high pressure gas I have three compressors, two being of fair size, and the other is simply a Westinghouse pump. My thought was to put a 25-horse power, 2,000-volt, motor on the compressor, on cogs and gears on a fly wheel. I will save some money on my compressor by putting on an unloading device, so when we pump more into the mains than is required, the unloading device will take care of it. The steam power for the gas plant is all made in the electric boiler room, and I was thinking of putting one of my exhausters on a motor, so as to cut out steam all summer long in my gas house. In the winter time I will require some, but in the summer time I can cut it all out, still leaving two compressors on steam ready to use, also an exhauster ready to use with steam, in case of electrical troubles. Doing this will cut out much leakage trouble. The generating plant is probably 150 feet from the boiler house, and as we have considerable trouble at different times of the year with steam leakage, etc., I thought I could save some money by putting in a vacuum governor, a compensator and a by-pass on the exhauster, like it is now rigged, so as to help govern. From the remarks as to governing with pulleys, you must run at a constant speed, and you can govern a trifle by your by-pass; but that is all handwork, which is only good for temporary work. I want something permanent, or not anything. I tried using a gasoline engine on the exhauster, and, while I was not an expert, I had a man who was pretty competent in many ways. I almost felt when we got through that if anybody could have made it work, he was the one, but it was not satisfactory at all. I tried the float, as on steam, but you can't do it with the gasoline engine. At least I am so satisfied from my experience, and I wanted to know if anyone here was doing it.

Mr. Butterworth—Has anyone had experience where, in using a motor or any non-variable speed, personal attention was not necessary? Have you tried putting in the by-pass which takes the gas back to your exhauster again, a pressure or automatic reducing valve, so as to assist controlling the vacuum that you had before your exhaust?

Mr. McCorkindale—That is what these vacuum governors and compensators are for.

Mr. Butterworth—Yes; that is what they are, being perfect when working on steam. We all know that, aside from the by-pass feature, they control the supply and cylinder arrangement and give permanent results; but the problem is to be rid of that steam in the summer time, using the motor for say 4 months, allowing the gas to return through an ordinary pressure reducing valve, and supplying when your engines do exhaust, or speeding too fast when it is running as slow as it can under constant speed. There is a time, as we all know, when sufficient gas does not pass to maintain the results we want. Now, supplying that gas through an automatic governor or reducing valve, would relieve us of a great deal of our anxiety at that point.

Mr. McCorkindale—I wanted to get my experience here instead of getting it myself.

Mr. Butterworth—Has anybody had that experience?

The President—There is no question but that outfit could be made to work; but it is a question whether you are saving any money?

Mr. McCorkindale—That would be immaterial.

The President—We work practically under like conditions (I do not know how many of us have electric plants), but under the Commission's ruling, where we make demands on the boiler plant for more than one utility, we are compelled to run a steam generator apportionment account, and we know absolutely, at the end of the month, as soon as we can total our figures, what our steam generation cost us. We measure all our gas or all of our high pressure steam, including that taken to the gas works. You carry it about 150 feet and we carry it about 280 feet. The line was put in 3 years ago, and it has worked and is working perfectly. We never had a leak save those in the extension joints, which, of course, must be gone over in any event. Figuring on the steam consumption of our gas department, I am unable to see where we could ever make any money by trying to drive anything with a motor. The only time your steam consumption will run high in your gas department, of course, will be in extreme weather, when it does run pretty high; but, take it at this time of the year, on a make last month of approximately 3 millions feet, I do not think the steam charge to our gas department was over $31.

Mr. McCorkindale—Ours runs about $180 per month.

President—Do you measure your steam absolutely?

Mr. McCorkindale—No; we proportion so much coal in the boiler room for each 1,000 feet of gas put out.

President—To get anything like actual figures I feel confident you will have to get away from that practice.

Mr. McCorkindale—I took a 25 horse power boiler to make a test, closing the valves and running this temporary boiler; the cost must be very close to that shown by my system of charging.

The President—What does that figure per 1,000?

Mr. McCorkindale—We charge the gas plant with 15 pounds of coal for steam for each 1,000 feet of gas manufactured in works, and for heating works. In addition to coal we charged 10 per cent. of the boiler room labor to the gas plant.

The President—Prior to building our new electric plant and attempting to get things in what we considered absolute, up-to-date manner, we charged the year around 3 cents per 1,000, crediting the electric light plant with that amount, charging the gas plant 3 cents per 1,000 for steam. Since putting in our steam and water meters, so that we know what our steam generation is, and then measuring the live steam, which is done through one of the General Electric Company's live steam meters.

Mr. McCorkindale—Steam flow meter.

The President—Yes; we then found our steam cost per 1,000 a trifle high; it ran well over 3 cents. In fact, in January it ran probably double that, but now it is costing very materially less.

Mr. McCorkindale—That includes steam for heating; in fact, everything?

The President—Yes; for the entire gas department, even pumping the quenching water. Under those conditions we were charging ample. The average will not be much over 2½ cents, hardly that much.

Mr. McCorkindale—That is, 3 cents per 1,000 for steam, which charge includes your coal and labor in the electric power plant?

The President—Yes; we charged the gas department whatever the amount was. We charged them 3 cents per 1,000 and credited the electric department with a like amount. On 3,000,000 feet that would be about $90. We are running a straight coal gas plant.

The President—Last month it was ⅓ of that, or $31.09.

Mr. McCorkindale—We are running a high pressure plant, and I am satisfied we use 10 times more steam on our compressors than we do on the exhauster. We handle the same volume of gas, high and low pressure. I have given up the idea since I asked this question of electrifying my exhauster, for the motor is very small; but will trap back my steam from the 5-horse engine into the boiler room and on to the heater. That would be good practice, especially in the daytime, when we haven't much of a pump load; but so far the compressor costs from 8 to 10 times more for steam therein than it does to handle the same amount in your main. The same thing applies in a water works system. I had charge of a water works system for 11 years, and found it cost me about 8 times more to lift the water out of the well with compressed air than it did afterwards to take it out of the reservoir with a compound pump, forcing it into a standpipe, a further 125 feet. I am having this same trouble with my gas compressor. From my figures I am right, and I will save money on my compression, but I cannot save anything, in fact I would be a loser in my exhauster department.

The President—You are perfectly right. I did not consider your high pressure feature.

Mr. McCorkindale—The high pressure takes a 25-horse power motor to run the compressor.

The President—You are absolutely right; you charge your currsnt in at switchboard cost.

Mr. Gilbertson—What pressure are you carrying?

Mr. McCorkindale—From 15 to 25 pounds at the works; downtown, I get from 10 to 25 pounds.

Mr. Gilbertson—Is it local, or in addition to carrying that high pressure?

Mr. McCorkindale—Our towns are 3 miles apart, and I have to run my mains to one town and back up the other way, on account of running over the highways, to get back. I cannot cross certain properties.

Mr. Gilbertson—Waukegan was one of the initial high-pressure towns in the West, and while I was employed with the Northwestern Gas Light and Coke Company (Evanston, Ill.), we installed a high-pressure system from Evanston to Barrington, on the main line feed, perhaps 35 miles into 7 towns. We pumped to 25 pounds of pressure at the initial point and carried 10 at the end of the line. Getting to the idea of pumping up excessive pressure and the governor system, this was individually governed at every house.

Mr. McCorkindale—We do that.

Mr. Gilbertson—An experience is happening right up in our State now, where they are making an extension from Mankato to a place called Northville. From a statement I got from one of their men, they were going to carry 60 pounds. I do not see why they do it.

Mr. McCorkindale—That simply reduces the sizes of mains necessary; that is all.

Mr. Gilbertson—That is very true; but going into the governing feature, you start out with an initial factor of say 60 pounds, but it is not necessary to maintain that 60 pounds. From high pressure experience I would say, in your pumping feature there with electricity, it is a matter of what you are going to deliver at the finish; your initial point always takes care of itself. With the governor at the house you can always deliver the gas and that is all that is necessary. At Evanston we started out with 8 inch for a distance of 3 miles, from a place called Niles to Desplaines, I believe it was 6; from Desplaines to Arlington Heights, I believe, 4; from Arlington Heights to Larrington I believe it was 4; there were 7 towns in line when I was there, which was 5 years ago. They have picked up in addition, as I understand, various towns since. I presume they have 11 towns now. I like to hear a discussion on high pressure, it is a good field for argument. Your initial point may be very high, but it is the point of delivery that must be considered. With this high pressure you say you carry 20 pounds some 3½ miles; now, with your low pressure governed, don't you think you could carry it below there?

Mr. McCorkindale—No, sir; we have not capacity enough in our mains. The area is not sufficient at 10 pounds at the works to give us even 5 pounds downtown.

Mr. Gilbertson—At the governor, where you deliver to the consumer?

Mr. McCorkindale—We aim, for safety sake, not to let it get below 10 pounds; for we find when we get below this that in certain portions of the town we hardly have any pressure at all. I would not carry my pressure any higher at the works than was necessary in order to give me 10 pounds down town, so as to hold the extreme ends of my smaller mains and give me enough to work properly. I did the same thing at Sherman, Tex. We work high and low there. On the extreme outlying district I put in high pressure, keeping the low pressure where it was. Out there, at first, or when I did not have many customers, I took what is now a relief holder, and weighted to give me 40/10. That was sufficient to supply the country for 8 months. When I found more customers, the non-arc was not enough, and I put on my governors again, putting the former in first. To save pumping I used this weight on the holder, and found afterwards I had to put in governors. We carry there now 3 pounds at the works, because it is not very big consumption. I have an automatic float on a Westinghouse air pump (home-made affair) that shuts the steam off the Westinghouse pump when it gets over 3 pounds. It all depends on these 3 causes; size of main, conditions and output.

Mr. Gilbertson—In pumping high pressure on your peak load, and keeping it up, have you had any experience with the ordinary Westinghouse air compressor?

Mr. McCorkindale—Yes, sir; use it right along.

Mr. Gilbertson—We had some experience (a railroad man told me its sequel) that was very good. We had two pumps at my station. I believed in using one, having the other for an emergency feature; but I pumped, on suggestion, from one into the other, using both, and found I could maintain my pressure much better than using the single pump. Did you ever experience that?

Mr. McCorkindale—Never tried it.

Mr. Gilbertson—It is good; it is well worth trying. By compressing from the initial point and pumping from one compressor into the other you can double the pressure.

Mr. Patton—Is your distribution system high pressure?

Mr. McCorkindale—Every inch.

Mr. Patton—Last fall we noted that our mains were rather small and it was a question whether to put in a low-pressure booster system at Winona or high pressure. We finally came to the conclusion we would put in a low-pressure booster system. Like in all old towns we have a lot of small mains. I think 65 per cent. are 3-inch, and Winona is about 14 blocks wide and 54 blocks long.

Mr. McCorkindale—I would recommend, without going into the thing deeply, to use your booster system as long as you can. At Sherman we have high and low, but I extended a 2-inch pipe for about 1,000 feet to a section that was low pressure on my high pressure line, and between 11 and 12 we cracked a valve and got only a little high pressure gas into that low pressure main, which practically became a booster. It was a loop system, and we had to go about 3 miles around by the time it got back to the works. If you put in too much it could not do any harm; it would simply come back to the holder again. We simply cracked the valve enough to give those people 1 or 1½ inches more than they otherwise would, and that system is still running. If you possibly can, keep away from getting to a total high pressure system, unless you have to; keep your low pressure and booster.

Mr. Patton—That was our original idea. After giving the thing a lot of consideration, we finally concluded it would be better to put in a low pressure booster system. We have a 10-inch feeder running from our works to Broadway street, where it connects to a 6-inch main, which extends about 16 blocks. So we decided to put in a No. 2 Sturtevant, high pressure blower, then to extend a 6-inch high pressure pipe to Broadway, using the Broadway main as a high pressure one—that is, a medium high pressure main, That required pressure gauges on its extreme ends and at the cross streets or intersections. At the present time we only intend to put in valves, if we can arrange this pressure as our output increases in the future. I have always doubted whether it was politic to put in high pressure, or simply the system we finally adopted.

The President—I do not want to bring this discussion to any unnecessary close, for the work of our session is practically completed, with the exception of two more questions. If we can finish these now we can adjourn. So with your consent we will go right along and finish. The next question is:

> "In the sale of industrial gas appliances, is it good practice to adapt burners to present appliances, or to insist on the purchase of appliances constructed for the purpose."

Mr. Patton—My experience along those lines indicates it is better policy to buy them outright. I have had several instances, especially in hotel installations, where we have tried to change over charcoal broilers, etc., and eventually before we got through the party became dissatisfied, and we had to get a broiler that would give satisfaction. Of course, we may have been ignorant in the reconstruction of this charcoal broiler, but our experience is that it does not pay to try to make these appliances unless you understand them.

The President—The gentleman who asked that question is not in the room. If he was not interested enough to stay I do not feel we need spend much time over telling him what to do. The next questions concern more particularly the water gas department. We have one water gas man here and I do not know how many more there may be The questions are several in number, but they can be answered rather briefly. The first is:

> "What should be the fuel consumption per 1,000 on a 4-foot water gas set, a 4 foot 6-inch set and a 5-foot set?"

Mr. McCorkindale moved that questions be sent to a committee, that the answers be incorporated in the minutes and that copies be sent to the questioner. [Seconded.]

The President—I will entertain that motion and will read the other questions, which will not require much time. The questions are as follows:

> "What should be the oil consumption per 1,000 on these sets for a 600 B.T.U. gas?"
>
> "What should be the steam consumption per 1,000 for the different size sets?"
>
> "What should the steam consumption for the blower engine, exhausters and pumps for these sets be?"
>
> "Should cold water be used in seal-box, or is warm water preferable?"
>
> "Will not the cold water condense some of the illuminants?"
>
> "What should be the blast pressure for the different size machines?"
>
> "Is there any advantage in metering the steam?"
>
> "Is there any device in use for measuring the air?"
>
> "Is there an advantage in using pyrometers?"
>
> "What should the temperatures be for most economical operation?"

"What should be the rclief holder capacity per 1,000 of make?"

"What should be the inlet and outlet connections to relief holder per 1,000 of make?"

The inclosed figures were given me. Are they possible?

Conditions.	Results.
Size of set	7 feet 6 inches.
Make per run	7,696
Fuel per 1,000	28.01
Oil per 1,000	3.34
Candle power	23.51
Candle per gallon	7.049
B.T.U.	626.42
Make per 24 hours	1,400,000
Makers' guarantee	900,000
3 minutes blow	5 minutes run.

The motion was then put and adopted.

RETROSPECTIVE AND INTROSPECTIVE.

The President—Gentlemen, we have reached the end of our work, and, as representing the officers of your Association this coming year, I wish to thank all who have been here for their attendance, and assure you the officers appreciated it. I bespeak for my successor as good a meeting as we have had this year, if not a great deal better.

Mr. Wortendyke—I feel as though I would like, at least for myself, to state my appreciation to the committee having charge of last night's entertainment. It was one of the finest and cleanest entertainments in connection with a gas association banquet, that I ever attended, and I would like to move a vote of thanks to the committee that had charge of the entertainment for last night. [Seconded by the President, put and carried.]

The Secretary—Mr. President, it gives me pleasure to hear the favorable comment on last night's affair. I refer you to the final call for this meeting, where you will notice that reference is made to the fact that the committee is directing its efforts to the improvement of the tone of such affairs. A remark was made 2 years ago, when I approached a man to join our organization, to the effect that he would readily join, but that he would have to refrain from attending the banquet unless I could give him the assurance that it was going to be clean. I told him I did not know how far the thing would run; and I had in mind just men like him when the thing turned out as well as it did last night. He should have been here.

The President—That will rest greatly with your coming President. I stated myself to the Entertainment Committee that what we wanted was something entertaining, something that would be clean; and I feel if that question lies with the committee the coming year, I think you will meet with just as much success. One matter to which I will call your attention is the effect of a stroke of lightninig that occurred in Fond du Lac, the contact resulting in the burning of a hole through a pipe. The pipe is here and speaks for itself, to show what the lightning did. I do not know whether any of you are interested. Evidently the lightning came through in some way and burned a hole right through the pipe near the edge of the coupling, where it was coupled to the burner or some other coupling. It is just a little round hole.

Mr. Humphrys—A motion that was made and no action taken on was the moving of a vote of thanks to the outgoing officers.

The President—The officers thank you. I tried to get away, but as long as you have brought it up again I will put it. [Seconded.] I do not think the officers are entitled to all of the credit by any means. However, I will put the motion as stated. [Put and carried.]

A motion to adjourn then prevailed.

Large Profits in Small Economies.

[Prepared by MR. T. J. WEBER for Twenty-first Meeting, Michigan Gas Association.]

Supplying light, heat and power is our business, and we might say that these words can be applied to our work. We want more light on recent discoveries. The gas engineer must put some of the latest economic manufacturing improvements to the acid test. Did it ever occur to you that we generally have to spend money to sometimes effect economies? Even if we do not always succeed, when our economies take effect the profits are usually large enough to more than counteract our failures. We need a display of heat (not with any show of temper) in discussing these things other people are doing. That is to say, we require energetic inquiry to prevent the cooling of our ardor, or that of our assistants.

Power should be allowed to, and be shown by, officials, so that steps can and will be taken to work out new ideas and thus improve our financial returns. If a manager has power, yet acts like a mule, then we know the remedy. We do not hear enough of what is being done in gas plants. Is it because very little is being attempted? Assuredly not.

How can we learn to do things that count most in improving our business? By our experiments; even by our failures. It had been truly said that a man who never makes a failure never makes anything. Credit is due every man who makes an honest attempt. We must either go forward or backward, as in the gas industry we cannot stand still.

Scmetimes, when the result looks like a failure, it has approached complete success, and a recital of facts before a go-ahead assembly, such as this, might very often result in just that small change in method, or in plant, that would mean the difference between discarding and establishment. On the other hand, some things are tried that never do any good—they have been tried often and proved wrong in theory. These old things keep cropping up, and enthusiastic young men in the gas business claim them as their own, until practical tests show the fallacies of the ideas. Let us exchange thoughts and ideas; we can work as a team and save labor, time and money. We can help each other along when on the right road, and stop those who appear, from our past experience, to be working in the wrong direction.

When I was asked to prepare a paper for this meeting, I thought it best to attempt a practical general paper and make it so that a fine discussion would result. Let us by the discussion make this a paper by the association, not by an individual. The object is to tell you what I have attempted with the aid of our local managers, then to listen to your discussion and criticism, afterwards to hear what new things you have tried out. Let us try and make this meeting room a clearing house for ideas.

Commencement.—The start of a gas company, after the franchise is granted, is in the office. If we could all start with a good site, plenty of cash, and a free hand, most of our offices would be better than they are now. Even, now, however, we can do a lot to make this part of our equipment better. It is in our office that we are known to the public, It is there we are judged (of course, I am taking it for granted that we make good gas, and have no need to be judged or criticized for our product).

In my opinion most gas companies can improve their offices and office systems. In many we find a bad assortment of fixtures—in others a big selection, but too many kinds, resulting in a crowded and confusing display. Above all things let us beware of dead stock. Don't order fittings just because you think they are good. "Minds differ as rivers differ." Do not be ashamed to ask your office help for an opinion on fittings. They combined are perhaps more representative of public taste or opinion than you alone are. A lot of offices have excellent fixtures, but the wrong kind of walls to set them off. I believe in the plan of showing fixtures in the kind of a room in which same will be used. Use less, show them to more advantage. If we must have a variable lot of fixtures, let us keep them in a special store room—not in the main office.

We all know what big returns we get from courtesy to clients; it has often been strongly recommended—it cannot too often be brought to the attention of the office force. One thing needs emphasizing and that is courtesy to local plumbers and gas fitters. They are sometimes inclined to believe the gas company is a competitor, so it is only right you should in every way try to make friends with them.

Something not so much spoken about is the advisability of courtesy to appliance men. They are looked upon by some gas men as a necessary evil. Some of the brightest men in the gas business are salesmen, and by always treating them as business friends, without undue familiarity, we can get a lot of good information about current events in the gas trade. I do not refer only to news about the special appliances a man is handling, but to real news about progress being made by brother gas engineers. Look upon the appliance and machinery salesman as a traveling newsagent. Treat him courteously and you will be all the better for it and so will the company for which you are working. In the office we start with the purchasing end. This is too frequently neglected. There is not sufficient cooperation between the purchasing and operating departments. Each particular company must work out its own plan of purchases; but in every case the chief consideration in buying goods should not be low first cost, neither should it be a matter of personal preference for a person selling goods.

Take coal, for instance, or coke, or any other fuel. What we want most, and must have, is uniformity. We must consider many things: The weight of ash and kind of ash; the candle power and yield of gas; the way the tar acts, and whether or not the coal gives off its gas easily. Suppose we can buy one coal at say $3 per ton, and another coal at $2.85 per ton, that with the last kind of coal we get ½ foot less gas per pound, 10 per cent. less coke and 5 per cent. more ash than we get with the first kind. In the last case we produce 500 feet of gas less per ton, which is offset by the 15 cents difference in the price of the coal. We also produce 120 pounds of coke less per ton of coal, however, and at $5 per ton, this amounts to 30 cents, making the first coal worth 30 cents more to us, while it costs only 15 cents more. This, without considering the disadvantages of 5 per cent. more ash in the second coal.

An operating man as a rule is a poor purchaser, and a purchaser is generally a poor operator, so we see why these two departments must work hand in hand.

Very careful thought should be given to the subject of stock. This is a matter that is very much neglected. A discussion of this question would be very valuable and a special paper on the subject would not be amiss.

Operating.—Having purchased our supplies, and with an existing plant to work them into gas and other products, we must keep a sharp lookout in the operating end in order to make the purchases and sales result in a profit. The operating man makes the money; the executive end should save it, as it cannot make it.

The only way to make a profit on any industrial operation is to practice the most rigid economy, not false economy of the regulated spigot and the free-running bunghole variety. Also, of course, we must insist on a daily observance of those rules, which long and hard earned experience proves are the ones best calculated to result in the best returns from labor and material. Failure to observe these rules has caused more loss and more accidents than all other causes combined. We must bear in mind that what is good and suitable for one plant may not be suitable or desirable for another. Size, location, kind of labor, sort of business done, all these are factors in scientific management. Our first chance to practice economy is in the generating department, water gas house or retort house, or both, separately and collectively. In the retort house we can figure out whether it will pay us to spend a little more money on the retorts and settings. One big thing you will soon be called on to consider is the use of silica retorts and settings, or clay retorts and silica settings. It is firm belief that silica settings have come to stay, but I am not so sure about silica retorts. We must conserve the heat in our settings, yet we must not lose sight of the fact that this must be done without sacrificing the stability of our retorts. Silica clay is unstable in the presence of moisture. It may be, therefore, for this reason we will find it not a good thing to have the retorts, themselves, of silica. The idea is a new one, and I am giving it a trial at our Chattanooga plant. Silica settings are not new, except in America. It would be difficult to find anything else in the old countries. They are established as economical settings; there are dozen of reasons why they should be used, and not one serious complaint can be made about them. In building anything of silica, where the wall is solid and of any length, you will have serious trouble unless you allow $\frac{3}{16}$ of an inch for expansion in every foot of length.

Another thing you must remember, in designing silica blocks, is that any size of block more than 300 cubic inches, other than a plain, square-corner shape, is very difficult to make. Always get plain shapes and never have them large. Straight brick should be used whenever possible, as silica shapes are expensive. Use 97 per cent. silica and lime bond. Do not use compounds of silica, ganister and plastic clay If you use what is known as pot clay, never put it in a place where there is great heat and weight combined. Many papers have been written regarding bench economies, so I am not going to take up your time on a subject that has been well written up recently. Let us get to something novel and more likely to interest you.

Take, for instance, the production of a combined coal and water gas (uncarbureted water gas). I became interested in this matter some years ago, when talking to a friend about recent developments in Europe with blue gas in coal gas plants. After studying the matter and working out some new ideas, we decided to make a trial of a new system, and have never had cause to regret it. We have used the system for two years in one of our plants.

Briefly I may say the plan is to use our regular Lowe water gas at a time. If you try to save fuel you will get a cool fire when carbon monoxide goes into relief holder. Then we exhaust from this into the hydraulic main of our retort benches, using as much as 10 per cent. of straight or blue water gas mixed with coal gas. We have completely eliminated our naphthaline troubles since using this system, and I think it is the explanation of our success. We use this gas to prevent the precipitation of a product which is the source of never ending annoyance, trouble and expense, when it deposits in pipes and mains, instead of being consumed at the burner.

There is one thing to guard against in this system, do not be too greedy. In other words, do not try to make your blue gas too cheaply. Keep a good, hot fire, and do not run too long at a time. If you try to save fuel you will get a cool fire, and immediately the amount of CO_2 in your gas will increase. That naturally destroys the candle power. If it can possibly be arranged, it is best to use a small lime purifier for the straight blue gas, in order to remove any excess CO_2.

Manufacture and Use of Blue Gas.—When the average gas superintendent has read about (or possibly heard of) the benefits gained by using uncarbureted water gas, or what is more commonly known as blue gas, the first thing he thinks of is to what extent will my company profit in the manufacture and use of this gas in combination with coal gas. Unless he can figure out some of the advantages to be gained, he is doubtful of what he has read or heard. To the man who is better informed, by reason of his closer touch with the more modern methods, and through being posted by current literature, which is now so easily obtained, the value received from the use of blue gas is to a great extent misunderstood.

I am quite sure that this value is real, and further think it doubtful if anybody can produce reports to show that, where properly made this blue gas (when used with coal gas) has produced unsatisfactory results. To the uninitiated the manufacture of blue gas seems comparatively simple. One will say, "All you have to do to make blue gas is to operate your water gas plant, leaving off the oil." To the one who has only this conception of the manufacture of blue gas, I can safely say, "He has much to learn."

It requires a careful plan, systematically executed, to properly manufacture blue gas, so that it will be fruitful of good results. I should say that among some of the essential things to be closely observed in the manufacture of blue gas is: First, the greatest amount of CO and H gases; the least possible amount of CO_2 and N. The maximum amount of blue gas made per pound of coke, the maximum make per hour on the machine, which means the greatest time for gas making, and the least possible "blowing time." When these problems are satisfactorily worked out, on a plan which is very carefully laid out, the value of blue gas is realized as a means of reducing operating cost, also through its help in eliminating naphthaline troubles, and in the production of gas which gives greater incandescence to mantle lights. In other words, increase in flame temperature.

To give a clear explanation, and convey a better understanding of the practical use of blue gas, the writer is pleased to give you our experience in using this gas in connection with coal gas for the past 2 years, in a case where for many years cousiderable trouble was experienced with naphthaline in street mains and services. These conditions would suddenly evidence themselves in the early fall, usually starting, September and continuing as late as December. Again naphthaline would show up in the early summer months, generally the latter part of June, and would last sometimes to August.

Despite the fact that everything known through personal experience, or through the experience of others, was done in fighting this trouble, yet each year the same fight against naphthaline stoppages had to be waged. Ultimately, this led to a systematic investigation into conditions. Continuous analysis of the gas developed nothing of particular value, other than disclosing the fact that we were passing from 14 to 56 grains of naphthaline per 100 cubic feet, as shown in the gas at the meter inlet. It is true that different conditions slightly reduced naphthaline contents, depositing same in different parts of the apparatus, yet following up these changes nothing of material benefit was derived. There was no lack of apparatus for properly handling gas, and no limit on cost of experiments to find some means of eliminating this nuisance. Yet it continued unabated, as hereinbefore described, until we introduced into our works the system of properly making blue gas, and properly amalgamating coal gas with this blue gas. So if I could say only that blue gas has no other value than that of eliminating naphthaline, I would feel that I had a right to fully recommend and endorse the use of this gas. As an evidence of its value in eliminating naphthaline, the following is offered:

(*Continued on page* 202.)

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NEW YORK, MONDAY, SEPTEMBER 23, 1912.

[Official Notice.]

Reduced Rates, Atlantic Meeting, N. C. G. A.

This message from Mr. B. J. Kellum, Chairman, Transportation Committee, N. C. G. A., rather goes to show that smooth, imperturable "Ben." is, as usual, successfully on the job:

"The Transportation Committee of the National Commercial Gas Association takes pleasure in announcing favorable action, by the Southeastern Passenger Association, on an application for reduced rates to Atlanta, Ga., for the December meeting. And while this action on the part of the Southeastern Passenger Association is necessarily restricted to the southeastern carriers, tenders and ticketing arrangements for basing purposes have been sent by the Southeastern Passenger Association to the other territorial Passenger Associations, with a request for their co-operation. The Committee, therefore, trusts in a later announcement to advise of the favorable action on the part of some, if not all, of these other Passenger Associations. Full particulars regarding arrangements for special trains, as well as special fares, will be published in the American Gas Light Journal at as early a date as possible. B. J. Kellum, Chairman.

[Special Editorial Correspondence.]

SIXTH ANNUAL CONVENTION, ILLUMINATING ENGINEERING SOCIETY.

The Clifton Hotel,
Niagara Falls, Canada,
September 16, 1912.

Gloom prevails all about, but not within, "The Clifton." The Sixth Annual Convention of the Illuminating Engineering Society is marking time with its attractive prospectus. Over 100 members are in attendance, and word is that scores more are on the way. The meeting was opened this morning, shortly after 10, by the President, Mr. V. R. Lansingh, of Cleveland, O., who introduced Mr. O. E. Dores, President of the Niagara Falls (Ont.) Board of Trade, and Mr. G. F. Nye, President of the Board of Trade, Niagara Falls, N.Y. It would indeed be difficult to determine who, of the double-welcomers, delivered the heartiest speech of welcome; but there can be no doubt whatever that both speeches were framed in the spirit that makes one feel there is much in fellowship. The response to the welcoming was made in happiest way by Mr. W. J. Serrill, who, all may rest assured, said that which should have been said. Following these international and fraternal amenities, President Lansingh delivered the inaugural address. Of course, his speech had mainly to do with the present state of the art which it is the wish and the will of the Society to foster, treating his main heads from the standpoint of current practice rather than from the possibilities of theory. This having been referred to a special committee for consideration and report, the report from the Committee on Progress next came in for consideration. It was read by Mr. George S. Barrows, of Philadelphia. Its findings, though instructive, and without doubt of interest, were not sufficiently definite or pointed to suit the thought of several of his hearers. However, this may be threshed out to better advantage when the text of the paper is before your readers. The work of the session of the first morning was ended in and by the consideration of the report of Committee on Nomenclature and Standards, which was read in abstract by Dr. C. H. Sharp, of New York City. Naturally, owing to the nature of the paper (which certainly teemed with evidence that its preparers had not been niggards in respect of time and thought devoted to proper consideration of the matters in hand, the members were requested to discuss it by means of written communications later on. A sensible enough conclusion to reach or course to take, in that no real illuminative good could come from oral debate on the points involved. In thanking the Committee for its splendid work, the happy outcome of which could only have been reached by consecutive counselling, especial stress was directed to the efforts of Doctors Sharp and Hyde in securing representation of the Society at the Zurich sessions of the International Commission on Photometry.

The first afternoon session (by-the-way, the meeting hall is in the rotunda of the Hotel) had sunlight in evidence, although gas was also on tap. The first topic taken up was the paper by Mr. R. F. Pierce, whose theme was "The Deterioration of Gas Lighting Units in Service," which titling does not seem quite indicative of the subject matter. Nevertheless the results related in the elaborated and painstaking manner usual with the author's presentations, showed that, with ordinary intelligent attention, on a lamp equipped with the highest quality mantles that can be purchased in the open market, the deterioration is substantially no greater with gas than with electric units. During the discussion Mr. C. O. Bond described a method of observing the changes which occur in the structure of the mantle. Micro-photographs are made of a small section of the mantle at regular intervals, the negatives being compared. Tests of 3 mantles, of different materials, were conducted, with the result that a cotton mantle showed a rent at 3,700 hours burning, and that the mantle structure had become generally quite ragged. At the time the experimenter left to attend the convention both the ramie and the artificial silk mantles had been burning 6,800 hours, without any apparent change in structure—which would seem a most remarkable fact. As usual Mr. Ward Harrison brought out a seeming discrepancy in the results of two tests in the showrooms of the Consolidated Gas Company, New York. The second symposium paper was on the subject of "High Pressure Gas Lighting." It was in three sections, thus divided: "High Pressure Gas Lighting in Great Britain," by Mr. F. W. Goodenough, of the Gas Light and Coke Company, London, England; "High Pressure Gas Lighting in Germany," by Mr. Oscar Klatte—as neither of the authors were present, their respective communications were read by Mr. George R. Barrows; and "High Pressure Gas Lighting in the United States," by Mr. R. N. Zeek, which was read by the author. The subject proved a forceful "exciter," for the discussion was lengthy and varied, but the installation of these lamps for commercial service by gas companies in America will be the best possible answer to all of the many and varied queries. Those in evidence in the discussion were Messrs. Serrill, Halvorson, Barrows, Elliot, Pierce and Bond. As Dr. C. P. Steinmetz was unable to complete his promised paper, on "Recent Developments in Series Street Lighting," in time for the convention, Mr. A. J. Sweet described a number of tests preparatory to a standard method of lighting railway postoffice cars. A short discussion on this topic brought the business sessions of the first day to a close. A most valuable feature of the way in which this Society is conducted is the common ground which it affords for the assembling together of men representing widely varying interests to become acquainted. And this is the part of wisdom, for when one knows his competitor the tendency or inclination to disparage the wares each has to dispose of is greatly reduced. The reception was not altogether a brilliant success, not that all the arrangements therefor had not been made with due care and on proper scale (indeed Mr. Macbeth and his associates are to be given a full meed of praise for their successful arrangings), but the fair sex was not as fully represented at the dancing function as was desirable.

Wednesday, Sept. 18, 1912.

The attractions of Niagara's great rush of waters are at hand, but the opportunities to view these are all too limited. This is a busy convention, and while we have the "keys to the city," to the "Maid of the Mist," to the many power houses and to the "house of shredded wheat," yet we have no time to turn the aforesaid openers in their respective locks. The morning session was opened by the paper by Dr. E. P. Hyde, on "The Methods of Research;" and then followed these numbers: "Heterochromatic Photometry and the Primary Standard of Light," by Dr. H. E. Ives; "A New Method and an Instrument for Determining the Reflecting Power of Opaque Bodies,"

by Dr. G. P. Nutting—this was read by Mr. L. A. Jones; and "A Study of Natural and Artifical Light Distributing in Interiors," by Mr. M. Luckiesh. As a relief from the earnest and thorough discussions of these technical papers, Mr. Arthur Williams, who was recently elected President of the Association of Edison Illuminating Companies, made a short speech, in his usual happy vein. The illumination primer, entitled, "Light: Its Use and Misuse," was presented by Mr. L. B. Marks. The pamphlet is intended for general distribution, and it is hoped (nay, many forecast such spreading of its leaves) its circulation will reach into the hundreds of thousands. Perhaps so. And here ended the second morning session.

Wednesday Afternoon, 18th Inst.

"Going Up!" Of course, this refers to the state of the attendance, to the weather and to the spirits of the members—buoyant; decidedly so. Over 150 are now on the listings. After luncheon the members gathered for the photographing; and to tell the truth, most of them looked anything but joyous as the groupings were formed. The papers considered during the afternoon session were: "The Determination of Illuminating Efficiency," by Mr. E. L. Elliot; "The Diffuse Reflection and Transmission of Light," by Dr. G. P. Nutting—read by Mr. L. A. Jones; "Vision as Influenced by the Brightness of Surroundings," by Dr. P. W. Cobb—read by Mr. Luckieseh; "A Proposed Method of Determining a Co-Efficient of Diffusion for Translucent Media," by Mr. E. L. Elliott; and "Some Reflecting Properties of Painted Interior Walls," by Mr. Claude W. Jordan, of the United Gas Improvement Company.

The Ladies.—While the men were earnestly considering the papers during the session Tuesday afternoon, the ladies were sharing in a "tour," the travelling vehicles naturally being cars of the gaseous type. The route covered miles of road, well-punctuated with points of interest.

The Banquet.—The banquet of "I. E. S." usually develops many features which go far towards putting it without the pale of the prosaic. The main dining room of the historic Clifton afforded ample space for the diners, and the accoustic properties of this room, the walls whereof have returned to waiting ears the phrases of many famous men, proved "as active as of yore." Just imagine the reverberating sybillants of multi-college yells. Toastmaster Arthur Williams set the style for the host of after-dinner speakers; and, if serious words were spoken, such were not heeded. A fair example of the trend may be had from the response of Mr. Norman Macbeth, to the toast, "How to Straddle," a part of whose recital was this: "The main difference between a duck and a hen was the difference between the gas man and the electric man. When the duck lays an egg the layer remains in quietude; but when the hen brings off a like fruition, there is considerable noise." A complete list of the speakers would resemble the roster of the prominent ones connected with the Society. Some of them were: W. J. Serrill, V. R. Lansingh, E. P. Hyde and H. E. Ives.

Thursday Morning, Sept. 19.

A short delay in the gavel call was the only evidence of doubtful hours the evening previous. First came the report from the "Illumination Committee of the Association of Iron and Steel Electrical Engineers," prepared by Mr. C. J. Mundo, as Chairman. It was read by Mr. G. H. Stickney. This was followed by a paper on "Present Practice in Small Store Lighting with Tungsten Lamps," by Messrs. A. L. Powell and C. L. Law—It was read by the former. The final paper of the session had to do with a Test of Indirect and semi-Indirect Lighting Units," by Mr. T. W. Rolph.

The Gorge Trip.—The first real breathing spell came Wednesday afternoon, when a special car conveyed the members through the "Gorge" and past the wonderful, awe-inspiring, yet beautiful rapids of the lower Niagara river. The evening session of Wednesday proved most interesting to the largest percentage of those in attendance. "Color Values of Illuminated Surfaces" suggests a most varied and attractive subject for illustration, and, through clever initiative of Mr. Basset Jones, Jr., the audience was certainly pleased and apparently enlightened. The distortion of the shape, form and color of various objects, due to changes in the color and direction of light, was almost uncanny. Following this dissertation was a lengthy discussion of the finances of the Society, and, as might be expected, few understood the reason that called for a cure therein. As might further be expected, some of the panaceas proposed were of a decidedly visionary nature.

Going on to the real business of Thursday morning, the order in hand was the continuation of the discussion on the Rolph paper. Then Mr. H. E. Mahan read a "Recounting of the Electric Illumination of the New Electric Building, Buffalo, N. Y.," which excellent description was from the thought of Mr. W. D'A. Ryan. "Flame Lamp Carbons," was the theme presented by Mr. A. T. Baldwin and Mr. R. B. Chillas, Jr.—it was read by the first named. The concluding number was by Mr. F. A. Benford, Jr., who in very clear method described the "Theory and Calculation of Illumination Curves." The usual felicitation were notable for the hearty thanks tendered to Mr. Norman Macbeth, whose management of the Convention details was continuous, successful and satisfactory. Although final adjournment of the business sessions took place Thursday morning, many took advantage of the opportunity to visit the great power houses, and other places of interest in which this busy spot abounds. Amongst those in attendance, besides the names heretofore reported, were: Messrs. F. N. Morton, J. M. Rusby, C. W. Wardell and A. Mason, of Phila.; O. H. Fogg and S. F. Hayward, N. Y. City; H. W. Terry, Jr., Ossinning, N. Y.; W. S. King, Cambridge, Mass.; and J. M. Riley, East Boston.—O.

[By Telegraph.]

TWENTIETH MEETING, PACIFIC COAST GAS ASSOCIATION.

San Diego, Cal., Sept. 18, 1912.

So far the twentieth has been the most successful and instructive convention of the Pacific Coast Gas Association. Delegates are present from all over the Pacific Coast. Special attention was given to the matter of securely establishing the degree of gas engineering course in the University. The subjects that attracted most attention the first day, were: "Determination of Gas Rates" and "Sale of Appliances for both Fuel and Light." Also, the successful welding of an 8-inch pipe, right in convention. The social side was noteworthy for its diversity, completeness and enjoyableness.

The officers elected were:

President—Henry E. Adams.
Vice-President—C. S. Vance.
Secretary—Henry Bostwick. —F. A. L.

MINUTE TO THE MEMORY OF THE LATE MR. WILLIAM R. BEAL.

At the last meeting of the Society of Gas Lighting, the following minute to the memory of the late Mr. Wm. R. Beal, was adopted:

William R. Beal was born May 13th, 1838, and died after an active useful life, June 4th, 1912.

After a preparatory education, in Grace Episcopal Church School, Mr. Beal began his business career, at the age of 15, as an employee in the office of the Newark Gas Light Company, in his native city, Newark, N. J. Two years later, after a short employment at Elizabeth, N. J., he began service as Superintendent of the Yonkers (N.Y.) Gas Light Company, which lasted for 11 years, save for a time during which he was a volunteer in the Union Army. In 1866 he became Superintendent of the Westchester Gas Light Company, in the then town of Morrisania, now a part of the Borough of the Bronx, City of New York, and remained with this Company and its successor, the Central Gas Light Company, for 37 years, during much of which time he was a large owner of its stock and was the President of the Company. Mr. Beal's energetic and wise management soon brought, and always kept, the Company abreast, and even slightly in advance of (and so aided greatly) the rapid growth of its territory.

In 1898 he sold his stock in the Central Gas Light Company, but at the request of the new owners he held until 1903 the position of President of its successor, the Central Union Gas Company. After 1900, however, his principal financial interests in the gas business were in Newburgh and Poughkeepsie, N. Y., where he was the President of the Gas and Electric Company of both these cities.

Joining the American Gas Light Association in 1873, Mr. Beal was always active in its affairs, and was its President in 1902—he was also a member of the Western Gas Association and of the Ohio Gas Light Association, and became a member of the American Gas Institute when that body was formed by the amalgamation of the three named Associations. In 1897 he offered to the Council of the American Gas Light Association a gold medal to be presented annually to the author of the best paper read at its respective meeting. The offer was accepted and the Beal Medal which was first awarded in 1898, has been available for award in each succeeding year by the American Gas Light Association and its successor the American Gas Institute.

The activities of so energetic and resourceful a man as was Mr. Beal could not be confined to the operating and financial management of the gas companies with which he was connected, nor to his work in gas associations, and he was also an efficient and valuable worker in church, educational, fraternal and institutional matters in all of the communities in which he was interested. Through his death these communities have lost a good citizen.

The loss to this Society is that of a charter member and an active worker. To us, his fellow members, there is the additional loss for each of a congenial companion and the ending of a true friendship of long standing. In recognition of this we adopt this minute for our records, and extend to his family the sincere sympathy which, because of our great loss, we can feel for them in their much greater one.

A. E. Forstall,
Wm. H. Bradley,
Geo. E. Woods, } Committee.

(*Continued from page* 199.)

Naphthaline contents per 100 c ubic feet gas containing no blue gas

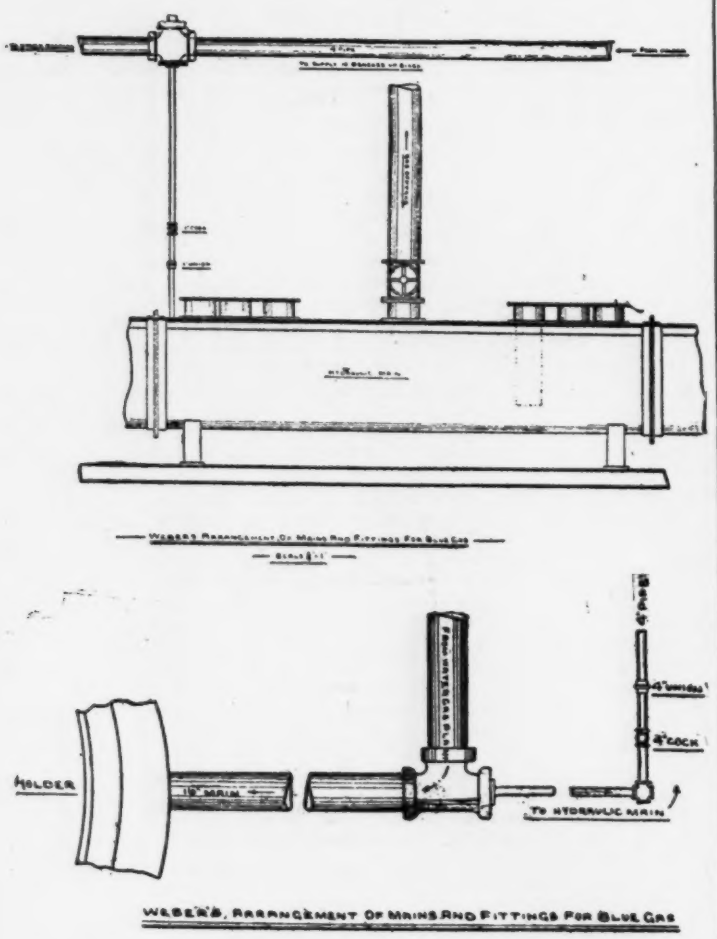
20.40 grains.	15.10 grains.
20.10	29.40
17.13	25.73
50.30	29.17
14.92	22.12
15.57	....

Average 24.30 grains; sample taken at street main governor.

Naphthaline contents per 100 cubic feet gas containing mixture 15 per cent. blue gas: 4.0, 6.2, 7.4, 4.75, 2.33, 2.10, 2 grains. Average 4.03 grains.

Considering that gas containing naphthaline in excess of 4 grains per 100 cubic feet will precipitate the excess in mains and services, under certain conditions, it will be appreciated that the above figures represented much relief.

It is, therefore, seen that the use of blue gas mixed with coal gas, resulted in a reduction of 20.27 grains of naphthaline per 100 cubic feet. In order to further increase the efficiency of blue gas, we used in our last scrubber Pintsch tar containing a large per cent. of benzol. This we had previously used, but without any material effect; but, when our gas contained the above mentioned 15 per cent. of blue gas, the use of Pintsch tar contributed very much towards eliminating naphthaline. Therefore, it will be seen that the use of blue gas is desirable, particularly in the works troubled with naphthaline, and when it is possible to scrub the gas with Pintsch tar or water gas tar. While no analysis has been made by the writer, he is of the opinion that blue gas has a strong affinity for many valuable hydrocarbons associated with tar and hydraulic main liquors and unites with them, thereby increasing its own efficiency and contributing to a larger yield per pound of coal. The following sketch will serve to show the plans of connections at the plant:



WEBER'S ARRANGEMENT OF MAINS AND FITTINGS FOR BLUE GAS

I propose to try this plan of making blue gas in combination with carbureted water gas. In other words, on every sixth run we will work without the addition of oil in the carburetor. This system will not act the same as in the coal gas plant, because there will not be any tar oils in contact with the blue gas, so no illuminants can be picked up. My idea is to clean up the checkerwork occasionally. On most water gas machines you will find there is a gradual building up of carbon and oil on the brick work, and I figure it that by running blue gas through same we may recover some of this that is not burned during the blow, and will also keep our checker cleaner.

I would like to digress for a minute, to refer briefly to the appearance of a works. It is safe to say that wherever we find a plant that looks run down at the heels, then it is run down. Another thing, if a plant is not kept in good order no power on earth will help you to instill energy or efficiency into the operators. Never mind whether a run down plant is a sign of slovenly workmen, or on the other hand, whether slovenly workmen are the cause of a run down plant and high operating costs. The two flourish together. One thing is certain, the manager is to blame; much more so than he will admit. Show me a manager with a dirty looking plant, one that complains of inefficient help, and I will prove him a poor specimen of a manager. The cleanest plant we have is run by negro labor, and it is at that plant we get the best results. Is it due to efficient labor? In a way, yes; but the sole cause of efficient labor is excellent management. If gas managers will never forget that truism, they will be better managers. The general public looks upon a gas plant as a public nuisance, half the time with good and sufficient reason. Men and women walking past the plant see untidy, unkept yards, and they know that means untidy men, who are not interested in their work. They see a rusty, dirty holder, that has not seen paint for many years; and what do they conclude? Why, that there is no need to protect property in a gas works, because profits are so great new property can be bought any old time with the greatest ease. This matter of paint is an important one. When I go into a plant, wanting to get a line on the working results, I look at the holder, listen to the machinery, smell the oxide, feel the condensers, lift the coke and scrutinize the cellars. A holder in bad repair, rusty, and with tar in the cups, is a sure sign of distress in a gas company. It shows the insane idea of trying to save $200 for paint, even at the risk of ruining about $10,000 worth of plant. It is cheaper to buy paint than to sell scrap. If I hear an engine knocking I know, without looking, that I can find all sorts of leaks in the retort benches and recuperators.

By taking a sniff at the oxide, one can form a pretty good idea as to what sort of attention is given to the condensers, scrubbers, tar extractor and washers. A look at the coke pile will give a better idea of the management of the plant than will any other one thing. Many a dividend has been dumped on the coke pile, and nobody got any benefit from it.

Let us insist always on cleanliness, because of the immediate benefits that result; and let us also remember that, if we insist on the men doing the work right, in a clean way, they may in the beginning kick at the little extra work, but they will respect you as a man and a manager. This is a good way to make your men a set of good boosters with the general public. Remember this, too: If you have an undesirable and dirty plant, it is impossible to get or keep a desirable class of labor. In some cases we find the bad state of a gas plant is due to the executive, not the managing end. In such case I would advise the managers to seek another master.

Then, again, we have the state of cleanliness in places where it cannot be seen by a casual glance. Let us start with our retort furnace. Do we all work faithfully according to our knowledge? My experience is we do not. We must keep our furnaces clean or else suffer daily loss. I need not refer to proper clinkering and cleaning; that is a necessity. I would, however, like to particularly call attention to the state of your recuperator walls.

Let me illustrate, by example. If some of you have gotten so interested in this lecture, or have fallen asleep, and your cigar has gone out, practice a little economy and emphasize the neecssity for clean recuperator walls. Do not pick out a new cigar. Take the old one with the ash still on it and try to light it. See how difficult it is. Knock all ash off carefully and the stump will light instantly. This does not apply to cigars stuck on pins or held by hairpins, just as my following remarks do not apply to recuperators with holes in them.

Look into the recuperators and clean out all the dust. Are the recuperators now clean? In a way, yes; but, to all intents, no. The ash still clings to them, and there is nothing so bad for keeping out heat as ash. The division walls, next to secondary air flue, should be almost *chemically* clean. A deposit of ash or carbon will get on them and then it has to be removed. Scrape the walls, then give them a wash with fireclay made into a milk in which salt has been dissolved. In building new benches insist on all recuperator tiles

being glazed. Then, when building the walls, give them a good wash with the glazing mixture. This will not only prevent deposit of carbon, but will seal up pores and cracks. Also, it will produce a better draft.

Another economy is in the judicious use of breeze. The worst part of your bench is the furnace, principally because it works under varying conditions. When we are clinkering, there is a great rush of excess air, and even after we close the ashpit door, there is, for some time, say 1 hour, an excess of CO gas, because of the open nature of the fuel. We can easily stop this and at the same time use up some breeze.

Just before we start clinkering, we should put about 100 pounds of breeze in the firing door, and let it lay on top of fire. Then, when we start to dig our clinkers, we have a sort of blanket over the coke bed which keeps out a lot of excess air. When the false bars are removed the fuel falls, and the now-heated breeze, with all tar burned out, falls through and mixes with the main part of coke, filling the free spaces. This makes the fuel bed after clinkering, just about normal with the bed throughout the balance of the 24 hours. Another thing. It is during clinkering periods that a big lot of dirt and solid carbon rushes through the setting and deposits in the flues. The breeze-blanket stops that to a great extent.

Having considered an economy in the generation of heat and regeneration through secondary air, it is not out of place to consider an economy in conservation of heat. Can any of you tell me if anything has been done to make front walls of benches non-conducting? Many years ago the walls of old-fashioned coke ovens were built hollow, with bonding bricks at intervals and the space was filled with some good non-conducting material. It seems to me we could do something like this to our front walls. We could leave them hollow and fill the space with asbestos wool or manure, else we would get sheets of asbestos and fasten same to the outside of our front wall. In this way we could save our heat; also, prevent the baking of carbon and tar in our standpipes.

What should we do with our waste heat? If we use too much we will reduce the efficiency of the present chimney stacks on our benches. Stacks are cheap. Heat is dear. By increasing our initial pull with higher stacks, and bringing same back to normal, by reducing the heat or the gases as they enter the base of the stack, we can effect big economies at little cost. A boiler and tank at back of bench would make plenty of hot water.

Let water heated by our waste heat clean the stoker and clean his clothes and towels, and if it does no more than that it has certainly done something. When your men go home, let them look and feel and act like boosters for the company.

We can make money out of our exhaust steam. In the large plants, where there is plenty of it, we can generate electricity by means of low pressure turbines. Take a look at the gas works in St. Louis and you will not see a pound of exhaust steam. It is all turned into energy. The difference in the appearance and noise of the plant is wonderful. In most of our plants we cannot use turbines, but can and should lead all exhaust to an oil extractor, then condense, it thus making hot feed water and also saving a lot of water. If we only stop the rusting of roofs where present exhaust steam deposits we will have done something to be thankful for. Let us get back into the retort house for a moment. I expect every man here, is now or has been troubled with retort house labor. Every year our troubles get worse, and as man becomes more educated the less will he agree to stoke retorts with a big scoop and lot of muscle. It is not too much to say that in many gas works the cry for good labor is becoming louder, and conditions in many plants are becoming critical. I have talked this matter over with several labor-saving experts, and will give you my conclusions.

I read in a paper, some 10 years ago ("Engineering Magazine") that, "All industrial work consists in the movement of matter, and the advantage of machinery is in the production and disposition of power to mechanically move materials." The movement in a gas works is chiefly, coal from cars to store, thence to retort face. The smallest part is in the charging of retort, although, of course, it is the part of requiring most skill or knack. Make the movement of matter mechanical and the need of skilled stokers will be eliminated.

To get to facts, my opinion is the so-called huge saving produced by charging machinery, on vertical and inclined retorts is nearly all traceable to the conveying machinery. I have heard it claimed by many men with much experience that it does not pay to work power-driven, charging and drawing machines unless you have 10 through benches or "eights" in daily average use.

I believe this cannot be questioned. On the other hand, we can, by a judicious use of hand power charging and drawing machines, make the work of our men easier, simpler and quicker; also, cut down the wear and tear on retorts. In Jersey, in the Channel Islands, several are at work and they have been used for 15 years. All that is necessary is a travelling carriage with rollers for a scoop. On the drawing machine the ordinary rake is used, carried on jockey or groved idler wheels. A shield plate can be used for keeping heat away from the stoker.

By its aid a man can charge a 10-foot retort in 30 seconds from time door is opened after coke is drawn. Previously, the scoop has been filled with shovel by hand. The installation consists of a track, one line being supported on retort house wall and the other on the buck bars. A traveler works along this, propelled by gearing and hand chain.

Within the main traveler is a smaller one, also propelled by chain and wheel, from which a channel steel frame hangs, that carries the divided scoop. Scoop is raised or lowered to retort levels by means of gearing, and it is self-supporting at any desired height. The framework carrying the scoop can be rotated so that, when not in use, the scoop can be left parallel with the front of the bench. The scoop opens outwards, thus throwing the coal well up the side of the retort, producing a better charge than can possibly be accomplished by shovel work. This machine, or a modification with or without overhead hopper, can be used in the smallest of works. The machine alone would save gas by reason of better charges, and with the retort open for less than a minute. The overhead hopper would in many cases do away with labor. In any case, a gas man would be independent of skilled chargers if he used such a machine. Most of you have had many anxious moments in extreme weather, trying to get and keep sufficient labor. The manual machine affords relief for such a strain. One other thing I would like you to consider is, where you depend on the stoker doing the work and being foreman, and cannot afford a real extra gas man as foreman for the night shift, then you are up against real trouble. A man who works hard all the time on routine work has no time or desire to think. Given less to do he will give some thought to his work and thus help you to get better results. Even in the best of small plants, where the men have hard work to do, many a bench has met its "Waterloo" through irregular hours in charging, or by reason of charges being skipped altogether. That means excessive heat and trouble all around the plant. Since the so-called trust has been smashed (so we are told) gas oil has fluctuated very much in price and in all cases we are now paying more for gas oil than we ever did. No relief from labor troubles can, therefore, be looked for by our method of starting up the water gas machine.

For the sake of a little variation let us consider another point. Why not put in good fire protection appliances and reduce the insurance rate on our property. Even if we get but little lower rates, it will pay us to protect ourselves. In my travels I have been absolutely astounded at the laxity of gas men in this mattor of fire protection. I will go so far as to say that we ought to have regular fire drills, as this would at least show us that all appliances for fighting fires were in their place. We ought to look ahead in this matter and give definite instructions as to just what ought to be done in certain eventualities, and in that way, even if fire did break out at any point, the men would know just what to do first. In this manner much waste would be saved by avoidance of accident.

In any case, let us get out of the old habit of keeping antiquated appliances, empty buckets that are so old and leaky that they are of little use, the placing of fire-fighting apparatus is in such position that they cannot easily be reached, and the idea that the old 50 foot of leaky hose is a good fire quencher; let us, I repeat, do away with these things and become alive to the necessity of adequate fire-fighting appliances. Let us put up some good chemical fire extinguishers in get-at-able places. Let the wall behind such be painted a brilliant vermillion, and above, in white letters, paint the words "For Fire Only." Insist on this rule being carried out. While speaking of accessibility, do not forget the absolute waste that goes on in most plants for lack of proper place in which to keep hand tools.

No plant should allow this to continue. It cannot be gainsaid that most frequently a fitter or a machinist will finish his work and throw down the tools anywhere in the vicinity, or will take same to the engine room and drop them in any old corner. This means deterioration of wrenches, hammers and other like tools; but it means considerably more than that. Many times one will notice that a small adjustment on a machine remains unattended to for weeks, just be-

cause, although the men may have had plenty of spare time in which to attend to the actual tightening up or fitting of a nut, but they have not time or inclination to find the proper tools to do the work. Sometimes an unsuitable tool is used to the detriment of the machine and destruction of the tool. Look around almost any plant and you will find a collection of useless Stilson wrenches, simply because same have been used as hammers. It is a very simple matter indeed, and costs very little outlay, to have a proper tool-box and keep all tools locked up. Make the men responsible for the tools, and when one is borrowed make the man who uses it not only bring it back but make him also return it in clean and working condition. Some plants make a halfhearted attempt to keep things straight by having nails driven into the wall on which tools can be hung. This is not going far enough.

Another economy can be practiced with lubricating oil. Do not spare the oil and spoil the machine; but do insist on stopping waste of oil when used for cleaning tar off the hands. The amount of good oil wasted in this way is quite a serious item. Keep all oil locked up and make one man responsible for it. Use a special tank with small pump and spigot for filling oil cans.. There is more oil spilled than is used legitimately. In moderate size plants an oil filter, to take care of oil drippings in crank cases, will soon pay for itself. Speaking of oil, let us insist on it being used unsparingly into the oil cups, and begin the economy from that point. Every rotating piece should be fitted with a positive lubricator. I refer to the kind that is fitted with two small pumps and which positively control and deliver oil to all the moving parts on a machine. By their use an engine hardly ever needs a repair; and knocking in crosshead and crankpin can be eliminated. Other economies that can be practiced are in the saving of water, boiler fuel, tar, liquor, etc.

I do not want to take too much of your time by going into all of these questions; but I do hope that members will take part in the discussion and touch on economies relating to saving of water, fuel tar, liquor, and such like, as there is no doubt that quite a number of gas men present must have some that have given big profits. I am here for the same reason that all of you are, and that is to learn. We can learn most quickly from the experiences of others, and it is, therefore, hoped that all of those who can will relate interesting experiences, which show the large profits resulting from small economies. One question I do want to touch on is the matter of purification, simply because, from my travels and readings, I find that it is the least understood subject in gas manufacture. I find that most of the trouble in bad purification methods is allowed to continue, simply because the managers do not keep accurate records of their oxide. In my opinion each manager should keep on record in his office the total number of bushels of oxide that he has on hand, and such record should be kept according to the heap as it is used as a batch in a purifier. In other words, a separate record should be kept on each batch of oxide, and if that is done there can be no possible continuance of loss through improper operating, neither can there be any chance of the manager running short of oxide at a time when he needs it, and when his books show that he has a good stock on hand.

These record sheets will not, of course, show the workmen how best to use oxide, but they are a check on the workmen, if the manager uses them intelligently. It is always presupposed that the manager has certain definite ideas regarding how oxide should be treated, and he could, of course, see they are properly carried out. In my opinion, a big economy can be made by the observance of some simple rules. The first being that proper temperatures should be maintained and a little higher temperature than usual should be used when new oxide is first put into a purifier. The next thing is that proper means should be taken to test the gas at the outlet of each purifier, instead of merely relying on a test at the outlet of the last, or last but one, box. In my opinion, the most simple instrument to use and the one that gives the best comparative results, is the Tutwiler burette, which is quite cheap and will easily save its cost in less than a year. One thing I have found in purification which, perhaps, some of you have also noticed, is that a box may for a few hours look as if it was about exhausted, whereas if you leave it on for a few hours more, it will apparently become active again. There are many ways in which this can be accounted for, although our knowledge of purification is so inexact that no definite answer can be given to the query as to just why the oxide becomes active again. It may be a matter of temperature and again it may be due to a change in the condition of gas. Another reason may be that some ammonia may be passing over and this, in itself, is often sufficient to revive an oxide that is apparently just about dead. The change for the better might also be due to a matter of moisture, for some oxides work best when nearly dry, while others will not purify at all unless they are very wet, Some of you may say, why endeavor to change your purification methods when the actual cost per 1,000 cubic feet is so low; in fact, some might say not worth considering. This isn't so much a matter of cost per 1,000 cubic feet as it is one of safety. More accidents occur through changing boxes, or through heating of oxide in the purifier than from any other single cause, and when an accident does happen from this cause it is generally serious. I believe very thoroughly in this system tried some years ago by the writer and used very extensively in Europe, called the backward cycle system, which consists in changing the order of the boxes quite frequently instead of only when changing the purifier to revive the oxide. It is needful to take care when using this system not to run the oxide so long that all the boxes will foul about the same time. I believe it would pay most companies here to put in a catch box, so that the regular boxes could be run and could be rotated so that they would be 50 per cent. foul when taken off, then the test box would always be there so that change in the purifiers could be made without the risk of foul gas going out on the town for a period of even a few hours. Another important factor, in regard to frequent changing of purifiers, is the nuisance it causes to the general public in the neighborhood of the gas plant. For that reason alone, if for no other, every effort should be made to make oxide work as long as it can in the purifier without having to take it out for reviving it.

There is one thing about this paper that I want you to excuse. It is written almost as I would talk to you, because I have not had the time to prepare it in such a way that the matters referred to would come in sequence, or, one might say, in the natural order of gas manufacture. I am trying to give you my thoughts as I hope you will give me yours, then we all ought to get together and select those things from the paper and discuss what we think would be of most benefit to gas engineers. Following that we should take some steps to see that they are carried out. At any rate, if we cannot insist upon a general observance of such simple rules through Michigan, we certainly ought to see that the rules are carried into effect in those works for which we are responsible. When one thinks of the hundreds of papers that have been read at the dozens of association meetings that have taken place during the last few years, and then tries to sum up just what good has been done by all this literature, it is really something to make one pause. Some ideas, as given in those papers, as in mine, cannot be carried out in all works, but I venture to say that some ideas can be carried out in some works, and it is to be hoped that the best rules, as laid down by experts who have studied the conditions in many plants, will be taken to heart, especially by the younger members of this Association.

Before concluding, I would like to mention one other matter. That is, economies should not only be practiced in the purchasing and in the manufacturing ends, but should also be observed, especially by the selling end. The selling force should not be so economical that they become mean, because, even if they only appear mean to the general public, it will give the gas company a bad name. One of the biggest economies that can be effected in gas works is in the sales. I mean that we should try and boost the consumption all we possibly can, and even if we tread on the toes of the electrical men in doing so, that should not deter the gas man from going ahead, even in such places as those where the gas and electric companies dwell in peace, side-by-side, and fill one office with glee. I believe the gas men have just about reached the time where they will give up the idea of merely selling or boosting gas for power and heat and cooking purposes, but will also go after the lighting business.

At one time, the electrical man was willing to say that the gas man could have the heating business, as long as he kept out of the lighting business, but now that condition is changing, and every day we find in hundreds of papers, illustrations and advertisements of electrical heating appliances and other kinds of appliances that have all along been considered the chief stand-by of the gas department. We will find, I am sure, later on that the electrical companies will rely upon the lighting bills to pay all their big charges, and they will then be able to go out and sell electrical current for heating and power purposes and so try to put the gas man out of business.

I believe that gas companies should go after the lighting business as much as they possibly can, and in order to do that, they must positively get some means of switching on gas lights as conveniently as is now done with electric lights. I read in a paper recently that a lot of gas men at a convention did not know that for years installations had been in practical use giving astonishingly good results, where all gas lights were switched on at will from the wall, such as is done by the button of an electric lighting circuit.

We have had before now the switch system controlling a light that is ignited by a continuous by-pass arrangement. We have also had the pneumatic system which has given fine results in many places. We have had also electric ignition system, and I notice in the *Journal of Gas Lighting*, May 28th, 1912, page 581, that there is a very complete description of a new switch-on electric gas lighting system that I think most of you should look up, and try out in every way for lighting. If we only apply the appliances that are at our command, we can make it just as convenient in every way and under all circumstances.

In concluding this paper, I wish to state that it would be very profitable as well as desirable for us to shake off those antiquated methods, which have already been tolerated too long by the average gas companies, and in place thereof assume and adopt more progressive methods, which must result in larger financial returns to the companies, better sanitary conditions of plants, and last but not least, in the elimination of all waste, This will ultimately assist in raising the prestige of public utility companies with the general public.

Exhibitors at the International Exhibition of Gas Appliances, Canadian National Exposition, Toronto, August 26 to September 7.

Not the least imposing feature of this great annual fair or exhibition, was the display made in the "Gas Booth," as will be seen from the following listings:

"*A. B.*" *Stove Co. (Ltd.), Canada and the U. S.*—This was the largest single exhibit in the gas stove class, and in it were displayed several types of the Company's latest ranges. The booth was very prettily furnished; and the complement of wicker chairs certainly was freely availed of by lady visitors. The special features of the A. B. range, such as the glass door, etc., were very much in evidence. The Company was represented by Messrs. C. E. Bartenbach, T. J. Moran and W. O. Henderson. It should have been earlier said that the display occupied three sections.

The Geo. M. Clark Division, American Stove Co.—This sterling concerns' wares were prettily displayed in two sections. The examples shown were, of course, typical of the Company's "Jewel" hotel ranges, room heaters, broilers, etc. Messrs. C. T. Mason and J. C. Buckley, were in charge.

The General Gas Light Co., Kalamazoo, Mich.—Last week a fairly good description of this handsome exhibit was given in our item columns. The display window system of lighting per the plannings of the Company, of which an excellent example was in line, attracted much attention. The representatives were Messrs. W. M. Blinks, W. F. Weadley, H. Humphreys and others.

The Consumers' Gas Co. (Ltd.), Toronto, Ontario.—This display (and a beautifully arranged one it was), and most capably "manned" by Mr. H. E. G. Watson, was notable for a plethora of examples of fuel gas appliances for use in the laboratory and the workshop. A 3-horse power gas heated boiler, manufactured by the Eclipse Fuel Engineering Company, and a 6 horse power gas engine of the Otto type were shown in active operation. Also, a great variety of English types of fuel burners, a crucible furnace, a large ore furnace and a blow pipe.

The Matchless Gas Lighter (Baulet-Nicholson Co., Detroit).—Mr. Hazen being the Canadian representative, showed a new system of lighting oven and top burners by means of a dry cell battery, tension spark coil with special spark plug. As Mr. Hazen kept reiterating, "So, in order to light any burner, you just push the button!"

The Moffatt Stove Co., Ltd., which reports shops in Western Ontario, Winnipeg, Calgary, Montreal and Vancouver, was represented by Mr. Mullan. The Moffatt combination coal and gas range was the specialty. A feature of this device is that, when not using coal, the top table consisting of 4 gas burners could be let down. When the coal section is in use the table can be folded into the canopy. Moffatt's firelight gas broiler, oven, etc., were also on the floor.

The H. Mueller Manufacturing Company's Sarnia (Ont.) Branch. Mr. "Fred." Mueller and Mr. A. Alexander were the capable representatives. The exhibit required 2 sections to properly display the goods catalogued, which were examples at length of the Mueller Company's standard goods.

The Cambridge Scientific Instrument Company (Cambridge, England), and the Thayer Instrument Company, Rochester, N. Y. represented by Mr. James Devon), exhibited a goodly array of thermometers, pyrometers, etc. The feature was a good example of the Fery radiation pyrometer, showing the temperature of a small gas retort at 1,850° F.

The Gurney Foundry Company (Toronto) required 2 sections to show a complete line of domestic stoves, hotel appliances, etc. Especial features were the sanitary line of board tables for hospitals with aluminum ware. They have 7 hospitals in Toronto equipped with these tables.

The Page-Hersey Tube and Lead Co., Ltd., represented by Mr. G. Sauber, occupied 2 sections. In these were carried 2 large pipe racks, about 20 feet in length, supporting pipes of like length, varying in diameter from 1 inch to 10 inches.

The Parker Russell Mining and Mfg. Co., Oak Hill, gas retort and firebrick makers, represented by Mr. Daniel R. Russell and Mr. Leigh Wickham, had a fine display of goods, including a silica sectional retort, a sectional retort of fireclay, and various silica clay products.

Burrow, Stewart & Milne Co., Ltd., Hamilton, Ont., represented by Mr. R. S. Duncan, showed a line of their gas stoves, special features of which are double cast bottoms and asbestos linings. An all-copper stove, shown on the floor, was often closely inspected. It is worthy of note that the named concern is the pioneer in gas stove manufacturing in Canada.

The W. M. Crane Co. (New York) had an exhibit that fully occupied 2 sections. Of course, the display consisted mainly of well put together examples of the Company's Vulcan types. Prominent in the listings was a detachable kitchen heater; also, a copy or example of its Vulcan gas water heater—1912 model! The Company's representatives were Mr. S. F. Terhune and H. L. Schutt.

The Inter-Colonial *Gas Journal*, of Canada, was represented by Mr. C. H. Grace. Our contemporary has many features to commend it.

Active, clever Mr. J. B. McNary represented the Canadian Meter Company, Ltd. The display comprised a well-mounted collection of gas meters, meter provers, meter connections and the like.

The Central Flat Iron Co., Binghampton, N. Y., showed several samples of its "I. M. E." gas heater sad iron, which we were told by one of the officials of the Consumers' Gas Company, was a device that had given 90 per cent. of its users (meaning patrons of the Company) perfect satisfaction.

A most effective showing was that made by the Sun Vapor and Gas Street Light Company, of Canton, O. Of course, the central figure in the grouping was the Company's alert and painstaking representative Mr. Henry E. Streiter. The main figure, of course, was the well-known handsome "Sun Gasolabra" type of street post. Also, a good example of a sufficient gas white way.

The McClury's, of London, Ontario, represented by Messrs. A. M. Smith and Stewart, had two sections showing a complete line of gas stoves, the principal feature being the new garbage burner.

The Stack Gas Water Heater, a product by the Somerville Mfg. Co., of Boston, Mass., whose representatives were Miss Hanson and Mr. E. S. Stack, showing 3 or 4 heaters connected for demonstrating purposes. Mr. Stack, certainly in putting forth the merits of his wares, was not anywise reserved in asserting the same.

The Detroit Jewel Gas Stoves, made in Detroit, and sold all over the States, made a good presentation of its wares, two sections being required for the items. The representatives were Mr. Shaw and Mr. A. Welch, senior and junior.

The Welsbach Company's display of burners, mantles, arc lamps, shades, ornamental goods, etc., was really profuse; and the things themselves were so shown that they were shown to the best advantage. The folks in charge were: Messrs, C. W. Wardell, A. Mason, T. W. Flanner, Geo. Clark, J. Jennings, R. F. Pierce, A. J. Knowlson and handsome "Ben." J. Kellum, of Chicago.

The Ruud Mfg. Co. was represented by a complete line of automatic gas water heaters, and many inquiries were directed to the caretaker, whose name your correspondent failed to get.

Mr. D. W. Allman (the inventor of the system) showed a model house heated by gas under and through the Allman hot water heating system.

The Consumers Gas Company also had these additional shows: A section fitted like a dining room, having a substantial dining table, 4 chairs and a beautiful dining room dome. Another example by the Company was a 2-section exhibit of a complete line of portable gas lamps. A third section was given over to a display of gas grates.

The Hamilton (Ont.) Gas Mantle Company, Ltd., represented by Mr. S. G. Buskard, exhibited a complete line of its wares; as did the Standard Meter Company, Ltd., the exhibit being under the careful direction of Mr. H. L. McAdam.

The Humphrey Company, of Kalamazoo, showed an attractive

collection of its gas water heaters. While the older new types need no commendation at our hands, or those of others, it is nevertheless true that the Humphrey square, automatic geyser was nearly always the center of a questioning throng. Nor was there any lack of entertainers, the representatives being H. S. Humphrey, T. Bullion, F. A. Lamke and J. A. Johnson.

The National Gas Light Company, of Kalamazoo, occupied a section, and its exhibit was well calculated to attract attention.

The Pittsburgh Water Heater Company (Toronto Division) showed an attractive line of its wares, which included or comprised working examples of its Lion tank heaters, the Bungalow automatics and the regular Pittsburgh automatics. Messrs. R. C. Frampton, R. T. Dennison and O. D. Teneyck had the booth in charge.

About the best visited section of the show was that occupied by Mr. Frank A. Smith, who was kept busy showing in practical way the "Ermalive" system of cooking in paper bags. This virtually includes all who shared in the exhibition.

Management & Commercial Methods.

A Gas Exhibit at a Bakers' Convention.—The professional bakers of America recently held a convention in Louisville, Ky., which was a largely attended "function." The enterprising and up-to-date General Manager of the Louisville (Ky.) Gas Company, remembering how he had taught the peripatetic merchants of Coney Island to roast bolognas, to toast bread, to bake clams, to boil coffee, by means of gas fuel, concluded to hire booth space in the show, there to exhibit devices and apparatuses intended to cause baking, frying, grilling and boiling by gas fuel, seem plain, even unto the sight of those who heretofore had not seen such things.

The illustration so plainly tells the story, that we will not attempt to enlarge thereon; but in taking leave of the subject we may remark that the show led to several actual sales of bakers' ovens, to say nothing of numerous prospects that have all the earmarks which precede a sale.

Recent Patent Issues.

Prepared for the American Gas Light Journal by Royal E. Burnham, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 20 cents.

1,037,920. Conduit for Gas Fuel. E. A. W. Jefferies, Worcester, Mass., assignor to Morgan Construction Co., same place.
1,038,077. Gas Generator. C. Bingham, London, England.
1,038,096. Safety Gas Burner. E. F. Debley, Portland, Ore., assignor to Campbell's Automatic Safety Gas Burner Co., same place.
1,038,120. Combination Oil and Gas Burner. J. A. Greenert, Hutchinson, Kas., assignor to B. L. Cornelius, same place.
1,038,157. Gas Heater. Golladay Lake, Cleveland, O.
1,038,161. Lamp. W. S. Levings, Minneapolis, Minn.
1,038,253. Gas Stove. C. W. Williams, New York City.
1,038,274. Regenerative Gas Burner. F. Blumenstein, London, England.
1,038,315. Process of Purifying Gases. H. L. Doherty, New York City.

Items of Interest
FROM VARIOUS LOCALITIES.

"C. A. S.," writing from Detroit under date of the 14th inst., sends this: "Mr. Henry M. Wallace, of Detroit, has been granted a franchise for the erection of a gas plant, in the live and hustling business city of Corpus Christi, Tex. Mr. Wallace plans to commence building operations in Corpus Christi at a very early date, and the work of erection, together with the task of laying mains and services, will be pushed with all possible speed. The named place is a city of 10,000 people, and is located on Corpus Christi Bay, thus ensuring to the corporation excellent shipping facilities, either by rail or water. This city promises to be one of the most important communities in the Lone Star State, and the nature of its population and the diversity of its industries afford unusual opportunities for a gas company to develop a successful, constantly growing business."

Mr. Robert F. Pack, formerly General Manager of the Toronto (Canada) Electric Company, has been appointed General Manager of the Minneapolis (Minn.) General Electric Company, and assumed that position the 10th inst. Since the resignation of Mr. A. W. Leonard, early in August, the position has been temporarily filled by Mr. Samuel Kahn, who resumes his operating duties in the Operating Department of that sterling concern, the H. M. Byllesby Company. General George H. Harries, Vice-President of the Consumers Power Company, will continue to act in supervisory capacity over all the properties of the named corporation, Mr. Pack being in direct charge of the Minneapolis property. Mr. Pack was born in England (1874), and was educated for rank in the British Navy, but changes in the domestic plans of his parents caused him to remove with the family to Canada. In 1901 he entered the service of the Toronto Electric Light Company as an office boy, at a time when the electric lighting of that city was being done by means of open series arc lamps. His capacity to advance, through quick absorption and sound assimilation of practical knowledge, seems best shown by noting the steps which he rapidly and safely took: Accountant, Comptroller, Secretary, and finally General Manager of one of the largest of Canadian's electric companies, serving a population of close to 450,000. He ranks amongst the most progressive of utility managers, is a member of the Executive Committee of the National Electric Light Association, and of the Am. Inst. Elec. Engineers, the Engineers' Clubs of Toronto and of New York.

The Springboro (O.) Gas and Electric Company has been incorporated by Howard P. Early and others.

Mr. A. P. Ewing, the eminently successful managerial head of the Detroit (Mich.) Gas Company, has, after 2 years' or more labor in the field of argument, exemplification and the like, finally convinced Mr. Henry Ford, the head of the great Ford Motor Corporation, that gaseous fuel is the right agent on such account in the huge Ford factories. The agreement calls for the delivery to the Ford Company of 2,000,000 cubic feet of gas per diem.

"B. V. B.," writing from Norfolk, Va., under date of the 13th inst., says: "On the 9th inst. the contents of a bottle of "Mumm's Extra Dry," trickled down the plates of the gasholder at the plant recently constructed for the supply of gas to the residents of High Point, N. C. Gas was turned into the mains the day following that in which the wine was wasted."

The gas output from the Holyoke (Mass.) Municipal gas works for last August totalled 19,943,390 cubic feet as against 18,517,563 cubic feet the corresponding month in 1911.

"G.," in a note from Galesburg (Ills.) dated the 10th inst., says that Mr. "Frank" A. Parker, formerly Manager of the Galesburg (Ills.) Gas Company, has resigned. He will hereafter supervise his fruit growing interests, and sever all active connection with the gas industry. In point of continuous service, he was one of the oldest gas men in the State, having become identified with the business in 1874.

The special election held to determine whether or not the taxpayers of Independence, Mo., should construct and operate a gas works on municipal account was peremptorily negatived. The vote was: 267 against; in favor, 185.

MR. ALVA SMOOT has resigned from the service of the Hastings (Neb.) Gas Company.

THE Brenham (Tex.) Gas Company, which is owned by Messrs. C. L. Brooke, H. E. Mann and H. P. Ball, of Ann Arbor, Mich., and W. A. Dewey, of Jackson, Mich., will (so its promoters say) be ready to supply gas by January next.

COL. S. D. CARPENTER, who built the Marshalltown (Ia.) gas works, died at his home in Montreal, Canada, some days ago. He was a noted contractor in Iowa 40 years ago, one noteworthy construction by him being the St. Louis and Cedar Rapids Railroad. He was in his 86th year, having been born November 26th, 1826. He is survived by a brother, Mr. Taylor Carpenter, of Cedar Rapids.

IT is said that the Regents' Publishing and Mercantile Company, of University City, Mo., has been granted a franchise to construct and operate a gas works in University City, Mo. The maximum rate that may be charged is $1 per 1,000 cubic feet. The Mayor of University City is Mr. E. G. Lewis, who denies that he is in any way connected with the Regents' Company, which he further declares is entirely composed of women. The franchise is to run for 25 years, and the incorporators are given 3 years—which should be sufficient time even for a bunch of women—to have the plant in active operation.

THAT prince of gentleman, and well-qualified manager of a gas works, Mr. Walter G. Africa, Supt. and Treas., the Peoples Gas Light Company, of Manchester, N. H., has been chosen to the Board of Water Commissioners, to fill the vacancy occasioned by the death of Mr. William Corey. His term will expire January 1, 1917.

MESSRS. SORAKICHI HIRAMATSU and T. Nakagawa, of the engineering staff of the Tokyo (Japan) Gas Company, are again in this country, inspecting our system of gas procedure, especially in connection with coke oven practice. From the States their route is to England, through Germany, and home by way of Vancouver.

ON the 23d inst., Mr. N. H. Larzelere, of Norristown, Pa., acting as Solicitor for the parties interested in the formation of the Pennsburg Gas Company, will appear before the Governor of Pennsylvania to petition for the necessary charter.

MR. JNO. SHERMAN has resigned from the staff of the Laconia (N. H.) Gas Company's office force, to accept a more advanced position at Brattleboro, Vt.

THE residents of Chicopee, Willimansett and South Hadley Falls (Mass.) districts, who now receive their gas supply from the Springfield Gas Light Company, will get a net rate ($1.15, gross) of $1 per 1,000 cubic feet. The Chicopee office will be retained, Mr. E. C. Peebles remaining in charge.

AT a meeting of the shareholders of the Woonsocket (R. I.) Gas Company, held last Monday afternoon, the action of the Directors (of August 14) respecting the sale of its properties, contracts, etc., to the Blackstone Valley Gas and Electric Company, was ratified.

WE are glad to note that, in the transfer of ownership of the Macomb (Ills.) Electric Light and Gas Company to the Central Illinois Public Service Company, Mr. Fred. S. Armstrong will be retained as Manager.

"BART.," writing from Sag Harbor, Long Island, N. Y., says: "I note your references to the gas situation in this vicinity, and believe you have been misled respecting the tenacity of purpose of those who are proposing to extend the mains of the Sag Harbor Lighting Company to and the Hamptons on the south side. The scheme is not only tenable, but is sure to prove a profitable one; for of a certainty the settlements of Bridgehampton and Southampton would sustain a separate plant." Yes, we know; that is so. It is not the system that brings doubt to us over the proposition; it is the personnel of some of the system's backers.

THE shareholders of the Wilmington (Del.) Gas Company made no change in the executive management of the concern. The chief officers are: President, C. H. Geist; Vice-President, Edmond Mitchell, Jr.; Treasurer and Secretary, H. A. Lang.

ONLY to-day (Sept. 19th) were we informed of the death of Mr. Edward C. Lee, formerly Secretary and Treasurer of the United Gas improvement Company, whose demise occurred in the Bryn Mawr (Pa.) Hospital, the afternoon of the 23d prox. He was in his 54th year, and is survived by his wife (a sister of George and William Philler) and five children. On his retirement from the U. G. I. Company he engaged in the real estate business in the Haverford (Pa.) section, where he had made his home for many years. He was a most estimable gentleman.

"J. L. V.," sends the following from Worcester, Mass., under date of the 15th inst.: "The reports of the officers made at the recent annual meeting of the Worcester (Mass.) Gas Light Company, show that the last fiscal year was the most prosperous one in the history of the corporation, which now happily enters on its 62d year. From Treasurer James P. Hamilton's figures it is shown that the gas sales for the twelvemonth were 821,646,000 cubic feet, that 9.3 miles additional street mains were laid--making a total of 178.1 miles now hooked up. Gas stoves, ranges, etc., to the number of 14,500, are in line, and the carbonizing or generating apparatus constructed about 2 years ago continues giving unbounded satisfaction. Of course, those clever gas men, Messrs. Chas. Dudley Lamson and James P. Hamilton, were respectively re-elected to the posts of President and Treasurer and Clerk."

THE Woonsocket (R. I.) Gas Company is extending, or is proposing to extend its main system to and through the outlying settlement of Burrillville.

"B. B. R.," writing from Toledo, O., says: "I'm glad to confirm your prior noting that the franchises and real properties of the Delphos (O.) Gas Company have gone into strong hands, through the purchase thereof by Messrs. J. A. Gordon and F. H. Lane, of this city. The new owners propose to reconstruct the plant and to extend the main system to districts the residents of which have been clamoring for such extensions for years. I've no doubt the extensions will increase the Company's sendout by 200 per cent., or more."

MR. HERMAN BURGI, Engineer of the Springfield (Mass.) Gas Light Company, is busily engaged in putting a second pipe under the Connecticut river, to insure the supply of gas to the west side of that busy city, which section is growing with great rapidity. The correspondent who informs us in this respect adds: "About two months will be required to do the excavating, the 'Pioneer' to be used as a dredge. A trench 4 feet wide, averaging 4 to 8 feet in depth, will be excavated from a point near the foot of Elm street, on the east side, to a point about 300 feet south of the toll bridge on the west side, running over diagonally. Near Bondi's island the river is so shallow that a channel will have to be dredged before the boat can be brought into action. In the trench will be laid an 8-inch, wrought pipe, high pressure type, with special re-inforced joints, so covered that it will be at least 3 feet under ground at all points, and exceeding 8 feet at a certain point below the bed of the river. This, together with the line now crossing the bridge, will be used hereafter under low pressure, and if anything untoward should happen to the bridge line, the under river main, under high pressure, would be sufficient to supply West Springfield, temporarily at least."

THE Gas Machinery Company, of Cleveland, O., has been awarded a contract for the new purifying machinery and connections to be placed in the plant of the Galesburg (Ills.) Street Railway and Light Company. Mr. D. McAfee, General Superintendent of the named Galesburg corporation, is nothing if not practical, and since he took hold in Galesburg the gas plant has been practically rebuilt under his capable direction. The Company's output increases in rather more than average ratio.

MR. PAUL NEWELL, of the Woonsocket (R. I.) Gas and Woonsocket Electric Machine and Power Company, has been appointed to a responsible position on the staff of the Columbus (Ga.) Electric Company. Changes in the Woonsocket corporation, due to Mr. Newell's transfer, are these: Cashier George L. Davis goes to the position vacated by Mr. Newell; Mr. Harry L. Pratt is promoted from Information Clerk to Cashier, and Mr. W. O. Norman is advanced from Collector to Information and Complaint Clerk.

Mr. R. T. VIGELIUS encloses the following, from Porterville, Cal., under recent date: Mr. Clarence M. Smith, President of the Consolidated Heat, Light and Power Company, of Visalia, Cal., has verified the rumor that a tentative agreement had been reached with the California Gas Company, whereby the business and plant of the Visalia Gas Compa .y will go into control of the Central California Company. The intention undoubtedly is to cause Visalia to be the central distributing station, which can also easily supply Tulare. Mr. Chas. S. Forney, President of the purchasing corporation, is responsible for the statement that changes have been found necessary in the plans of the Company, and that work will be started at once on improvements for this immediate district which will readily absorb $150,000. Visalia will be the central plant with an auxiliary, in all probability, in Porterville. From Visalia a high pressure line will be run to Porterville, where a 200,000 cubic feet capacity holder will be constructed and a feeder line will be stretched through the east side towns.

The Market for Gas Securities.

Strange to relate, the figures from the Exchange this morning (Friday), respecting quotations for Consolidated, show a smart gain over those returned last Friday. The opening was reported at 146 to 146½, and a good bit of trading is reported. The piping in the downtown section of the city is being put in proper shape, with the result that next winter pressure conditions are sure to be greatly improved. To show how great has been the growth of gas demand in this city, we may remark that in 1870 the service pipe to Nos. 40, 42 and 44 Pine street was 1¼ inches diameter. When the present modern structure was erected (1889) the service was 2 inches in diameter; the latter was removed this week and its substitute is 4-inch.

Brooklyn Union shows very little change, although it is a certainty that, from an earning point of view, the quotations of 225 to 250 should prevail, instead of the 146 to 148 quotation that actually rules. Peoples, of Chicago, slowly advances, the bid for it to-day being 117. The general situation favors the holder.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

SEPTEMBER 23.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	Capital.	Par.	Bid.	Asked
Consolidated Gas Co.	$78,177,000	100	146	146½
Central Union Gas Co. — 1st 5's, due 1972, J. & J.	3,000,000	1,000	103	105
Equitable Gas Light Co.— Con. 5's, due 1932, M. & S.	1,000,000	1,000	105	106
Mutual Gas Co.	3,500,000	100	152	157
New Amsterdam Gas Co.— 1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	101	102½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	35	50
1st Mtg. Gold Bds. 5 p. ct.	1,500,000	—	98¼	100½
New York and East River— 1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	95	100
Northern Union— 1st 5's, due 1927, J. & J.	1,250,000	1,000	99½	101
Standard	5,000,000	100	60	70
Preferred	5,000,000	100	90	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	103	105
The Brooklyn Union	15,000,000	1,000	146	148
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	299,650	500	120	—
Out-of-Town Companies.				
Bay State	50,000,000	50	7-16	½
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	500,000	1,000	97	100
Boston United Gas Co.— 1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	85
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,680,000	1,000	104	105¼
Cincinnati Gas and Electric Co.	29,500,000	100	87	90
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	90½	91
Preferred	3,036,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	13,460,084	—		—
Mortgages, 5's	3,400,000	—		—
General Mortgage 4½	10,661,000	—		—
Con. Gas Co., Baltimore City, 4½	2,751,000	—		—
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	94	96
Bonds	75,000	—	—	100
Detroit City Gas Co.	6,580,000	—	—	50
Detroit Gas Co., 5's	881,000	1,000	75	80
" Prior Lien 5's	5,619,000	1,000	97	100½
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	133	136
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	130	133
" Bonds, 5's	10,500,000	—	104	106
Indianapolis	2,000,000	—	38	45
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	91	95
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	86
Bonds, 1st 5's	3,822,000	1,000	98½	99
Laclede Gas Co., St. Louis.	10,000,000	100	105½	106
Preferred	2,500,006	100	90	100
Bonds	10,000,000	1,000	102½	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,370,000	50	120	130
Madison Gas and Electric Co. " 1st Mtg. 6's	400,000	1,000	106	
Massachusetts Gas Companies, of Boston	25,000,000	100	89½	90¾
Preferred	25,000,000	100	95½	95¾
Montreal Gas Co., Canada	9,000,000	100	233	236
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	97	98
Bonds, 6's	6,000,000	—	127	128
New Haven Gas Co.	5,000,000	25	182	190
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	117	117½
1st Mortgage	20,100,000	1,000	102	102½
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105½
Pacific Gas and Electric Co.	15,500,000	—	64	65
St. Joseph Gas Co.— 1st Mtg. 5's	1,000,000	1,000	96	98
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	104	105
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	3,447,000	1,000	94	96
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	101	103
Washington (D. C.) Gas Co.	1,600,000	200	420	425
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	—	—

MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, October 16 to 18, 1912. Marlborough-Blenheim Hotel, Atlantic City, N. J. Officers: President, Ira C. Copley, Aurora, Ills. Secretary, Geo. G. Ramsdell, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting and Gas Show, Toronto, Aug. 26th to Sept. 7, 1912. Officers: President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, New York City, Oct. 9, 1912. Officers: President, R. M. Searle, Rochester, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street. New York City.

Gas Meters.—Monthly meetings. Chairman, Will W. Barnes; Commissioners, W. H. Pettes, L. W. Peffly; Secretary, H. Thurston Owens, 42 Pine street, New York City.

Guild of Gas Managers of New England.—Annual meeting, March, 1913. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

Illinois Gas Association.—Annual meeting, March 19th and 20th, 1913. Chicago, Ills. Officers: President, H. O. Channon, Quincy, Ills.; Secretary-Treasurer, Horace H. Clark, 115 No. Oak Park avenue, Oak Park, Ills.

Illuminating Engineering Society.—Annual meeting, Niagara Falls, Canada, Sept. 16-19, 1912, Meetings of Sections, monthly. Pres't, V. R. Lansingh, New York City; Secretary, Preston S. Millar, 29 W. 39th street, N. Y. City. Sections: New York, Secretary, C. L. Law, 124 West 42d street. New England, Secretary, H. C. Jones, 10 High street, Boston, Mass. Philadelphia, Secretary, L. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, J. B. Jackson, 26 North Market street. Pittsburgh, Secretary, J. C. Mundo, Oliver Building.

Indiana Gas Association.—Annual meeting, March, 1913, Indianapolis. Officers: President, Howard L. Olds, Indianapolis; Vice-President, Wm. Wallace, Lafayette; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, Burlington, Ia., May 22, 23, 24, 1913; Officers: President, C. W. Fair, Atlantic, Ia.; Secretary, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, October 17-19. Manhattan, Kas. Officers: President, B. F. Eyer, Manhattan, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association.—Annual meeting, September 4-6, 1912; Toronto, Canada. Officers: President, F. W. Blowers, Kalamazoo, Mich; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April, 1913; Joplin, Mo. Officers: President, P. A. Bertrand, Joplin, Mo.; Secretary and Treasurer, P. W. Markham, Brookfield, Mo.

National Commercial Gas Association.—Annual meeting and Gas Show, Dec. 2-5, 1912. Atlanta, Ga. Officers: President, C. L. Holman, St. Louis, Mo.; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, Cleveland, O., May, 1913; Officers: President, M. B. Daly, Cleveland, O; Secretary, T. C. Jones, Delaware, O.

New England Gas Association.—Annual meeting, February, ———— 1913. Boston. Officers: President, D. D. Barnum, Worcester, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

New Jersey State Gas Association.—Fall Meeting, Sept. 21, Atlantic City, N. J.—President, William H. Pettes, Newark, N. J.; Secretary-Treasurer, Arthur H. Osborn Belmar, N. J.

Ohio Gas Association.—Annual meeting, February ———, 1913, Columbus, O.; President, John M. Garard, Columbus, O.; Secretary, L. B. Denning, Columbus, O.

Oklahoma Gas, Electric and Railway Association.—Annual meeting, May, 1913. President, Noel R. Gascho, Alva, Okla.; Secretary, H. V. Bozell, Norman, Okla.

Pacific Coast Gas Association.—Annual meeting, San Diego, Cal., September 17, 18, 19, 1912. Officers: President, W. Baurhyte, Los Angeles, Cal.; Vice-President, Henry E. Adams, Stockton, Cal.; Secretary-Treasurer, John A. Britton, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, York, Pa., April, 1913; Officers, President, H. H. Garner, Norristown, Pa.; Secretary-Treasurer, W. O. Lamson, Jr., West Chester, Pa.

Society of Gas Lighting.—Annual meeting Dec., 18, 1912; monthly meetings, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 29 West 39th street, New York city

Southern Gas Association.—Annual meeting, ———— 1913, ———— Officers: President, C. E. White, Montgomery, Ala.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. April———1913, Galveston, Tex. Officers: President, F. M. Lege, Jr., Galveston, Tex.; Secretary, H. S. Cooper, 405 Slaughter Bldg., Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May ——— 1913, Milwaukee, Wis. Officers: President, I. F. Wortendyke, Janesville, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.